

ATTITUDE *of* CATHOLICS
TOWARDS
DARWINISM *AND* EVOLUTION

· H · MUCKERMANN, · S · J ·

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Attitude of Catholics

TOWARDS

Darwinism and Evolution.

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H. MUCKERMANN, S. J.

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INTRODUCTION.

AT every turn we are brought face to face with the magic words of modern science, Darwinism and Evolution. Nor is it difficult to see the destructive influence which these captious phrases have hitherto exercised, especially on the minds of the young.

Significant, indeed, is the remark which the zoologist Fleischmann makes in his lectures on the theory of descent. "In fact," says he, "the charm exerted by the modern theory of descent upon every person open to impressions has proved to be remarkably efficient. No other scientific hypothesis is equally capable of entangling and at the same time holding us fast within the intricate meshes of its suggestions. The problem involving the history of man's earliest days long since buried in oblivion; the question of man's first appearance on this earth, and the inquisitive search into the first small beginnings from which he reached the lofty pinnacle of modern culture and civilization; such and kindred questions must inevitably, at one time or other, suggest themselves to every thoughtful man and imperatively call for an answer." ¹⁾

Thus it sometimes happens that also in Catholic circles men of prominence rise up in defense of Darwinism. Others, on the contrary, filled with a timid and exaggerated apprehension of falling victims to the seductive charms of this hypothesis and with an

¹⁾ Die Descendenztheorie, Leipzig, 1901, p. 1.

instinctive horror for all that savors of the theory of evolution, prefer to shelve the question. For, in their minds, the admission of any evolutionary principle is tantamount to a denial of God's existence, and necessarily implies that the loathsome and degenerate ape was man's progenitor.

We propose to offer to the educated Catholic public and especially to Catholic students a clear and brief exposition of the true nature of "Darwinism and Evolution," adding at the same time such observations as are necessary to define the attitude of Catholics towards them.

In all questions of grave moment bearing on the subject, we have carefully consulted Father Wasmann's latest publication "Modern Biology and the theory of Evolution,"¹⁾ which has met with universal satisfaction and applause. From this work, too, we have adopted the distinction between the fourfold meaning of "Darwinism," which we have made the basis of our inquiry. Besides, we have not neglected to call to our assistance the best works of many recent and reliable non-Catholic scientists.

We open our treatise with a short enumeration of the principal meanings of the terms "Darwinism and Evolution."

The word "Darwinism" is taken in a *four-fold* sense, one of which, however, may easily be abused.

In its *first meaning* the word designates the *theory of natural selection*, which was established by Charles Darwin in the year 1859.

¹⁾ Erich Wasmann, S. J., "Die Moderne Biologie und Entwicklungstheorie." 2. Aufl., Herder, 1904, pp. XII, 323, 40 Abbildungen und 4 Tafeln.

The *second meaning* of the word is contained in Darwin's doctrine amplified and generalized to a *new philosophical system*, to a new world-view. Darwinism in this meaning is sometimes spoken of as "*Haeckelism*," in memory of its founder, Ernest Haeckel.

In its *third acceptation* Darwinism applies the principles of Darwin's theory of natural selection to the human species and signifies the theory of *man's animal descent*.

The *fourth* and last meaning of Darwinism is (as we shall point out in the course of the present essay) *nothing but the misuse of a term*, and in reality identical with the *general theory of organic evolution in as far as this is opposed to the theory of constancy*. The latter theory maintains that the systematic species of plants and animals have been originally created in the form in which they exist at present.

Accordingly we must from the very outset, clearly distinguish between the four interpretations of "Darwinism and Evolution," just assigned. Thus are we enabled to separate the chaff from the grain and to draw the line of demarcation between shadow and light, error and truth; then, and only then, can there be question of forming a sound judgment about Darwinism and the theory of evolution.

PART I.

DARWIN'S THEORY OF NATURAL SELECTION
AND OUR ATTITUDE TOWARDS IT.

CHAPTER I.

Darwin's Theory of Natural Selection.

THERE are, beyond doubt, myriads of animals and plants living on this little planet of ours. Suffice it to say that in the various collections of insects alone there are to be numbered, to say the least, some 250,000 different species, each of which in turn bears invariable characteristics (called also specific marks) peculiarly its own.

Whence these numerous animals and plants?

One might answer, the chicken from the egg, the egg from the chicken; and the first egg or chicken came directly from the hand of God. In other words, it might be held that all the different species of animals and plants were originally produced by God, such as we see them today. But besides this answer *another explanation* might be given. For, one could say that in the beginning God created but a few species of animals and plants, which in the course of ages were transformed into a countless multitude of others, until they finally reached their present stage of development. *Neither of these theories, as we shall point out in a subsequent chapter, runs counter to the*

postulates of our religion. For, the latter only maintains, but with unqualified determination, that no species of animal or plant exists which is not indebted for its existence to the Creator of all things. As to the rest, faith is silent, leaving us completely in the dark concerning *the manner* in which the animals and plants of today came into being, by *directly* or *indirectly* coming from the creative hand of God.

But, be this as it may be, *Darwin* defended the latter hypothesis and *held* that the present species of plants and animals have not always been the same, but turned out to be "the lineal descendants of some few beings which lived long before the first bed of the Cambrian system was deposited." ¹) In his "Origin of Species" Darwin, moreover, admitted that the first species were originally produced by a Creator, an opinion, which, it is true, he rejected in later years.²)

¹ "Origin of Species," New York, (Science edition, 1902), p. 314.

²) In his Autobiography Darwin writes as follows: "When thus reflecting I feel compelled to look to a first cause having an intelligent mind in some degree analogous to that of man, and I deserve to be called a Theist. This conclusion was strong in my mind, as far as I can remember, when I wrote the Origin of Species, and it is since that time that it has very gradually, with many fluctuations, become weaker. But then arises the doubt, can the mind of man, which has, as I fully believe, been developed from a mind as low as that possessed by the lowest animals, be trusted when it draws such grand conclusions? I cannot pretend to throw the least light on such abstruse problems. The mystery of the beginning of all things is insoluble by us; and I, for one, must be content to remain an Agnostic." (The Life and Letters of Charles Darwin, edited by his son Francis Darwin, vol. I, p. 282).

In his "Origin of Species" Darwin wrote: "To my mind it accords better with what we know of the laws impressed on

Now, in order to explain this gradual change of species, Darwin advanced his so-called *theory of natural selection*.

What do we understand by this theory?

It is a well-known fact that the various breeds of horses and of dogs have not always been as they are at present. They have been changed by man making them subservient to his wants and to his fancy. Those animals, whose conditions have been ameliorated by the change, were selected by the breeders as sub-breeds, and thus by degrees the various domestic races sprang into existence. "The accumulative action of selection, whether applied methodically and quickly, or unconsciously and slowly, but more efficiently," is the "predominant power," to which the domestic races owe their origin.¹⁾

Darwin imagined that a similar process is repeated in nature independently of man's influence. He attempts to show that there is an innate tendency in all plants and animals *to vary in every direction* and to matter by the Creator, that the production and extinction of the past and present inhabitants of the world should have been due to secondary causes, like those determining the birth and death of the individual. When I view all things not as special creations, but as the lineal descendants of some few beings which lived long before the first bed of the Cambrian system was deposited, they seem to me to become ennobled" . . . "There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one; and that, while this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been and are being evolved." (p. 314 and 316).

¹⁾ "Origin of Species," p. 73.

DARWIN'S THEORY OF NATURAL SELECTION. II

accommodate themselves in structure and habits to the external conditions and environments on which they so vitally depend, such as climate, food, locality and so forth. In fact, *all differences "blend into each other by an insensible series."*¹⁾ Now, it is absolutely impossible that all animals appearing in this world can reach the state of maturity and propagate their kind. One single codfish, for instance, is able to produce 9,000,000 eggs in a season. Whence the food for so many individuals? An entire ocean would not be large enough to harbor all the fish that within a few years would be brought to life by one such prolific codfish and its numerous offspring. Even in case of the elephant, which "is reckoned the slowest breeder of all known animals", we should have, according to Darwin, "after a period of from 740 to 750 years . . . nearly nineteen million elephants alive, descended from the first pair."²⁾ Consequently, most of the young are doomed to destruction before they have reached the stage of complete development, and thus "*a struggle for existence inevitably follows from the high rate at which all organic beings tend to increase.*"³⁾ In this struggle for existence those individuals "having any advantage, however slight, over others," will survive, whilst any variations "in the least degree injurious" will be "rigidly destroyed." "*This preservation of favorable individual differences and variations and the destruction of those which are injurious,*"⁴⁾ is the definition Darwin himself gives of natural selection,

1) "Origin of Species," p. 87.

2) "Origin of Species," p. 103.

3) "Origin of Species," p. 101.

4) "Origin of Species," p. 121.

which, in fact, he considers "not the exclusive" but "the most important means of modification." ¹⁾ The selected variations are transmitted and accumulated through "the *strong principle of inheritance.*" ²⁾

Hence, as Geikie interprets Darwin, "varieties at first arising from accidental circumstances may become permanent, while the original form from which they sprang, being less well adapted to hold its own, perishes. Varieties become species, and specific differences pass in a similar way into generic. The most successful forms are by a process of natural selection made to overcome and survive those that are less fortunate, 'the survival of the fittest' being the general law of nature." ³⁾

To mention only *one example*, by way of illustration, the *giraffe* is said to have developed in the following manner :

"By its lofty stature, much elongated neck, fore-legs, head and tongue, the giraffe has its whole frame beautifully adapted for browsing on the higher branches of trees. It can thus obtain food beyond the reach of the other Ungulata or hoofed animals inhabiting the same country; and this must be of great advantage to it during dearth." ⁴⁾ Hence the individuals of the nascent giraffe "which were the highest browsers and were able during dearths to reach even an inch or two above the others, will often have been preserved; for they will have roamed over the whole country in search of food. . . . These will have intercrossed and left off-

1) "Origin of Species," p. 30.

2) "Origin of Species," p. 185.

3) "Text-Book of Geology," London, 1893, 3d ed., p. 666.

4) "Origin of Species," p. 302.

spring, either inheriting the same bodily peculiarities, or with a tendency to vary again in the same manner; while the individuals less favored in the same species, will have been the most liable to perish. . . . Natural selection will preserve and thus separate all the superior individuals, allowing them freely to intercross, and will destroy all the inferior individuals. By this process long-continued, which exactly corresponds with what I have called unconscious selection by man, combined, no doubt, in a most important manner with the inherited effects of the increased use of parts, it seems to me almost certain that an ordinary hoofed quadruped might be converted into a giraffe." ¹⁾

From this amusing account of ludicrous details it readily appears that there existed way back in the misty ages of the past certain long-necked and long-legged ruminants. By chance, of course, the neck and legs of some were an inch longer than the neck and legs of others. Now, who can fail to see the incalculable advantages which in times of dearth result from the structure of a frame singularly adapted for browsing on high trees? Hence, those ruminants which could reach highest luckily survived and transmitted the coveted quality of their peculiar elasticity to their offspring, while the rest perished miserably. Thus, with not a little predilection, has Mother Nature chosen and cherished the giraffe of today.

The theory of natural selection, then, comprises the following propositions: "All organisms have offspring. These offspring have an innate and universal tendency to variation from the parent form. These variations are indeterminate — taking place in all directions.

¹⁾ "Origin of Species," p. 303-304.

Among the offspring thus varying, and between them and other contemporary organisms, there is a perpetual competition and struggle for existence. The variations which happen to be advantageous in this struggle — from some accidental better fitting into surrounding conditions — will have the benefit of that advantage in the struggle. They will conquer and prevail; whilst other variations less advantageous, will be shouldered out — will die and disappear. Thus, step by step, Darwin imagined, more and more advantageous varieties would be accidentally but continually produced, and would be perpetuated by hereditary transmission. By this process, prolonged through ages of unknown duration, he thought it was possible to account for the millions of different specific forms which now constitute the organic world.”¹⁾

¹⁾ Duke of Argyll, *Organic Evolution*, London, 1898, p. 79–80.

CHAPTER II.

Darwin's Theory of Natural Selection Refuted.

WE have seen what Charles Darwin understands by his theory of natural selection. The question next confronts us *what are we to think of this theory?* Is natural selection or the survival of the fittest in reality the mainspring of specific evolution, and is such a theory in consonance with reason and experience?

To many, it is true, Darwin's theory may at first sight appear quite innocent and harmless, the more so as Darwin does not fail to make occasional but meagre mention of a Creator. Still, *our reply* to the question put above *is and must remain a decidedly negative one.*

We would remark, first of all, that Darwin's explanation of the origin of species appears *naïve, not to say mythical.* Fleischmann has given expression to this thought in the following words :

“There is in this world a subordinate deity, called Variability. It is her blessed mood to produce everywhere minute changes, but why and wherefore she cannot tell. An examination is introduced. Natural Selection holds the chair of chief examiner. Only by trial, which consists in the struggle for existence, Natural Selection is able to pass judgment. Animals with bad notes are doomed to destruction, those of better ones are allowed to live. Darwin tells us that we have not been present at the examination, much less in the private council of Natural Selection : but we may rest assured that Natural Selection will select

the very best, supported, as she is, by the prudence gleaned from the experience of a thousand years. She examines, criticizes, praises, perfects, degenerates organs, removes entire species from the arena of this world, preserves the more perfect species and adapts animals to new conditions of life. . . ." In short, "wherever no reason can be detected for the origin of new species and new plans of organization, the deity of Natural Selection is quickly summoned to the rescue. She draws out herbs to trees, grinds the eye from three transparent layers, stretches and lifts the neck of the giraffe, and paints the butterfly 'Kallima' like a dry leaf, just as the gods and goddesses of the naive members of the human race." ¹)

Indeed, besides bearing the stamp of puerile naiveté, Darwin's theory is *altogether insufficient in itself and in open contradiction to reality.*

For (1) when called upon to offer explanation for the *origin and increase* of useful characteristics and of new organs more perfectly developed, the theory of natural selection is desperately helpless. Nor can it be otherwise. For, by virtue of selection nothing new can be produced. *Selection* with all the world of meaning which the champions of evolution may force into the term, can merely choose between already existing conditions, nothing else. *It may destroy, but it cannot create.* Hence the origin of new species with new characteristics and organs, and all the beauty and variety of forms which constitutes the present world of living beings a world of veritable wonders, *is the work of chance, of blind and impotent fortuity.*

Such is the logical conclusion at which radical

¹ "Die Darwinsche Theorie," Leipzig, 1903, p. 399.

Darwinism must necessarily arrive. But it is a conclusion which, as reasonable men, we cannot but uncompromisingly condemn. How, we ask, could all the highly complex organs of animal and plant life, endowed with all their marvelous order and fitness that puzzles and defies the puny intelligence of man, be the issue of a game of hazard? If so, we might on equal grounds assert that all the beautiful churches and magnificent cathedrals which the thought and genius of Christian art erected, happened to take their stand on this earth of ours by sheer casualty. By accident, of course, the blocks of stone and grains of sand were heaped together by the sportive winds, and lo, with the desired effect! By chance the stately arches wound their graceful turns; by chance the towering steeple with its rising bulk crowned the noble edifice. All that could be suitably employed for the structure, its embellishment and style, survived the great struggle between the single stones and sands, whilst all the rest was lost.

"Year after year," says the Duke of Argyll, "and decade after decade have passed away, and as the reign of terror which is always established for a time to protect opinions which have become a fashion, has gradually abated, it has become more and more clear that *mere accidental variations* and the *mere accidental fitting of these into external conditions*, can never account for the *definite* progress of *correlated adjustments* and of *elaborate adaptations* along certain lines, which are the most prominent of all the characteristics of organic development. It would be as rational to account for the poem of the Iliad, or of Hamlet, by supposing that the words and letters were adjusted to the conceptions

by some process of natural selection, as to account by the same formula for the intricate and glorious harmonies between structure and function of organic life." ¹⁾

Moreover, *small accidental changes*, as Darwin supposes, are *much too insignificant* to be of any real advantage to animals and plants in their struggle for existence. What is the value and use of an unfinished organ? Of what advantage will it be to the giraffe if, after some

1) 1. c. p. 84. It is true that Darwin, at least in his *Origin of Species*, did not admit these implications. He even says (p. 190): "I have hitherto sometimes spoken as if the variations were due to chance. This, of course, is a wholly incorrect expression, but it serves to acknowledge plainly our ignorance of the cause of each particular variation." This admission, however, does not change the theory itself. Very significant in this connection, is what Darwin says in his autobiography, written in 1876 . . . "The old argument from design in Nature . . . fails now, that the law of natural selection has been discovered . . . We can no longer argue that for instance the beautiful hinge of a bivalve shell must have been made by an intelligent being, like the hinge of a door by man. There seems to be no more design in the variability of organic beings and in the action of natural selection, than in the course which the wind blows." (*The Life and Letters of Charles Darwin*, edited by his son Francis Darwin, vol. I. p.279).

In connection with this quotation, F. Darwin adds: "My father asks whether we are to believe that the forms are preordained of the broken fragments of rock tumbled from a precipice which are fitted together by man to build his houses. If not, why should we believe that the variations of domestic animals or plants are preordained for the sake of the breeder? But if we give up the principle in one case . . . no shadow of reason can be assigned for the belief that variations, alike in nature and the result of the same general laws, which have been the ground-work through natural selection of the formation of the most perfectly adapted animals of the world, man included, were intentionally and specially guided." (*The Variation of Animals and Plants*, 1. ed. vol. II. p. 431).

thousand years, its neck will be an inch longer or shorter? What is the use of a wing which, consisting at first of a little stump, will only after a million years be turned into an organ adapted for flying? Again, the one-sided development of a single organ would be totally useless, even harmful, unless at the same time the *entire organism would be subjected to a corresponding change*. But how could so stupid, blind and powerless an agent as natural selection accomplish such a mighty task, especially if we take into consideration that most of the specific characteristics of animals are *biologically indifferent* and of no advantage to either individual or species in their struggle for existence?

(2) *The theory of natural selection is opposed to the most evident facts.* For, to begin with the main point, it supposes an infinite number of minute variations and knows of no well-defined species. But the natural sciences teach us the very contrary. Paleontology, as well as our best books relating to the classification of the present fauna and flora, prove conclusively that there is *no chaos* of variations in nature, *but a well-defined system* of classes, families, genera and species.

There were none, perhaps, so well acquainted with the structural characteristics of plants and animals as the two greatest naturalists of the modern world, Cuvier and Linné. Cuvier was principally concerned with the extinct forms of life, while Linné studied the living forms as they exist now. But both considered the stability of species as the fundamental principle of their entire work. Similarly Prof. Heer, the ingenious author of "Primæval Switzerland," maintains "that in nature there is exhibited much less of a tendency towards the fusion of species than of a force

manifested to preserve specific characteristics." "Although a species may deviate into various forms, it nevertheless moves within a definitely appointed circle, and preserves its character with wonderful tenacity during thousands of years and innumerable generations, and under the most varied external conditions." ¹⁾

Consequently Prof. Heer most decidedly contradicts Darwin's supposition of "a perfectly gradual and imperceptible transformation of species, always going on without cessation." ²⁾ Here is a striking illustration of Prof. Heer's contention! "The Swiss alpine species," he says, "may be surrounded by species widely different from those of the original mountain-abode of the plants. They may be living under different physical conditions; yet they preserve their specific characteristics for thousands of years and during a succession of innumerable generations; and it is impossible to distinguish the descendants of the Alpine drift-flora now living in the Swiss Alps from plants of the drift-flora in Iceland and Greenland." ³⁾

Even the numerous new species which, as a matter of fact, made their appearance in the course of the long geological periods were as stable and invariable as we find them today. "In the Jurassic rocks," says the Duke of Argyll, "we have a continuous and undisturbed series of long and tranquil deposits — containing a complete record of all the new forms of life which were introduced during these ages of oceanic life. And those ages were, as a fact, long enough to see not only a thick (1300 feet) mass of deposit, but

¹⁾ "The Primaeval World of Switzerland." London 1876. vol. II., p. 284.

²⁾ 1. c., p. 282.

³⁾ 1. c. p. 283.

the first appearance of hundreds of new species. These are all as definite and distinct from each other as existing species. No less than 1850 new species have been counted—all of them suddenly born—all of them lasting only for a time, and all of them in their turn superseded by still newer forms. There is no sign of mixture, or of confusion or of infinitesimal or of indeterminate variations.”¹⁾

These testimonies could be multiplied without end. Indeed, we are unable to comprehend how men like Prof. Plate can deny the existence of sharply defined species and can call “variability” a fundamental phenomenon in the world of organisms. The very contrary is true.

Nor is natural selection, as a matter of fact, in any way able to produce new specific properties. This has been clearly demonstrated by the great botanist Hugo de Vries. His principle reasons²⁾ may be summarized as follows:

a) Statistics bear witness to the fact that in consequence of variability, the properties of plants do not change except in two directions, namely as to “plus and minus.” Existing characteristics may be increased or reduced, but not changed into something new.

b) The progressive development of the single specific marks is not at all unlimited. If conditions are favorable, 2—3, if ordinary, 3—5 generations are quite sufficient for the change. Further selection, if constantly applied, at best results in preserving the changes brought about, but never increases them.

¹⁾ 1. c. p. 147.

²⁾ Hugo de Vries, “Die Mutationstheorie,” Leipzig, 1901, vol. I. p. 83 ff.

c) Each selection is succeeded by a corresponding regression, which is the more marked, the greater the change produced by selection. Moreover, the regression itself invariably tends toward the original specific characteristics. As soon as the influence of a constantly applied selection ceases, the race or variety produced by that selection loses its stability and invariably returns to the specific form from which it was derived. The retrogressive change is accomplished within the same time, as was needed for the opposite process, that is, within a few generations.

Consequently, in the face of such reasons and facts *we are forced to reject Darwinism, in as far as it assigns natural selection as the prime cause of specific evolution.* For this theory, besides being at variance with facts, is totally insufficient in itself; because in its futile attempt to furnish an explanation of the origin of useful characteristics and of the order and harmony so dominant in the world of living beings it must have recourse to chance.

PART II.

THE GENERALIZATION OF DARWIN'S THEORY AND OUR ATTITUDE TOWARDS IT.

CHAPTER III.

Haeckel's Monism.

IN the preceding chapters we drew the chief outlines of the first and foremost meaning of Darwinism, and arrived at the conclusion that the proposals of a theory presumptuous enough to set up natural selection as the *principal* agency in the development of species cannot possibly be accepted. "Natural selection, or Darwinism," says Conn, "is almost everywhere acknowledged as insufficient to meet the facts of nature, since many features of life cannot be explained by it."¹) Even the renowned zoologist, Prof. August Weismann of Freiburg, who once upheld the "omnipotence of natural selection" with the enthusiasm of a zealous advocate, is slowly beating a retreat and has been practically led to acknowledge the "impotence of natural selection". The well-known botanist, Strassburger, too, but a short time ago a staunch defender of natural selection, has assumed a decidedly aggressive attitude. Dr. Hans Driesch even ventures so far as to write in the *Biologisches Centralblatt*: "Dar-

¹) "Evolution of To-day", New York and London, 1887, page 203.

winism, like that other curiosity of our century, the philosophy of Hegel, is a thing of the past; both are variations of the same theme, 'how an entire generation can be hoodwinked'; and neither of them exactly tends to give succeeding ages a very high opinion of our passing century."¹) And in another article he adds: "For a long time has so-called Darwinism reaped unmerited applause; though from the very outset men of judgment (Wiegand) declared and in the course of events frequently repeated that this theory was positively insufficient and in point of logic shrouded in obscurity. However, not only earnest inquirers are fascinated by these inadequate attempts, but also others who are influenced not so much by a scientific impulse as by an indefinite, incomprehensible liberalism—a vague craze for revelation, if we be allowed to use the term. And what was the result of this fascination? That Darwinism was treated rather as a sort of new religion than as a subject of scientific import. It was followed by results usually consequent upon such an innovation and created champions who would have done honor to Mohammed—luckily the only weapons at their disposal being paper and ink. In the opinion of the intelligent, however, Darwinism has long since run its course, and the eulogies sounding its merits have proved to be its funeral dirges, in accordance with the adage, '*De mortuis nihil nisi bene*' (Say nothing but good of the dead), containing at the same time an implicit confession that all pleas in its defense are but abortive attempts."²)

¹) Vol. XVI, p. 355.

²) Vol. XXII, p. 182.

Thus, in the opinion of competent judges,¹⁾ *Darwin's theory of natural selection*, because of its total insufficiency, *is, or ought to be, repudiated by every reasonable man*. That it will be relegated to oblivion, with little or no chance of revival, seems to be only a matter of time. In the interim, leaving it to moulder in its grave, and bidding farewell to the devotees who mourn its premature demise, we turn our attention to the *second meaning of Darwinism*, derived proximately from the principle of natural selection as generalized especially by Ernest Haeckel to a philosophical system and made to be the moving factor of a new world-view.

I. WHAT IS IN SHORT THE GIST OF THIS WORLD-VIEW? "*Realistic monism*" is the proud name with which the "German Darwin" and his abettors have christened this child of their fancy. Let us call it by its right name from the very start. The word "monism" is derived from the Greek *μόνος*, which means an undivided whole. Hence, realistic monism means that *all things in existence constitute an undivided because identical whole*. "Monism", says Haeckel, "is neither extremely materialistic nor extremely spiritualistic, but resembles rather a union and combination of these opposed principles, in that it conceives all nature as one whole, and nowhere recognizes any but mechanical causes. Binary philosophy, on the other hand, or dualism, regards nature and spirit, matter and force, inorganic and organic nature, as distinct and independent existences."²⁾

¹⁾ Other testimonies as to the decadence of the Darwinian theory are found in Dennert's book "*At the Deathbed of Darwinism*" (translated by E. V. O'Hara and John H. Peschges), German Literary Board, Burlington, Ia., 1904.

²⁾ "*Evolution of Man*", vol. II, p. 461.

Originally Darwin had merely lowered the barriers separating the various species of plants and animals. Haeckel decrees that *all difference between God and the world, between matter and life, between body and soul, must henceforth and forever cease.* "With unlimited freedom the universe extends itself through all the domains of time and space. It is matter in its continuous motion, which by separation and mixture rises to higher forms and functions, and by evolution and dissolution describes a circle without beginning and without end" (Strauss). From chaos and confusion, from an infinite world of atoms spinning about without order and purpose, the entire universe has steadily evolved itself under the guidance of eternal and unchangeable laws. The earth teeming with the life, luxuriance and wealth of its three kingdoms, and subjected to the sway of man, its noble and powerful lord, is nothing else than an issue of material forces. Thought and volition, learning and virtue, culture and civilization, *all the final outcome of an eternal struggle for existence, of a perpetual survival of the fittest.*

Haeckel himself has characterized his monism in a lecture delivered at Altenburg in 1893.¹⁾ The real creator of this organic world is in all probability an atom of carbon, a tetrahedron composed of four primitive atoms. The human soul is but the sum of those physiological functions whose elementary organs are represented by the microscopic ganglion cells of our brain. In this respect the human soul is identical with the lowest infusoria. Consciousness is but the

¹⁾ According to a résumé given by the "liberal" Protestant writer Mr. Stead (confer "Stimmen aus Maria-Laach", vol. 48, p. 575).

mechanical action of the ganglion cells and as such is to be reduced to the physical and chemical processes in its plasma. It follows from these dogmas

(1) that *the belief in the immortality of the soul*, which during life inhabits the body and leaves it at the moment of death, is *a superstition* fondly cherished by the credulous, but owing to the rapid strides of monistic philosophy out of favor with all friends of science;

(2) that *there is no such thing as personal immortality*; for the only soul which man possesses is nothing else than an intricate mechanism of nervous activity. With the decomposition of the nervous substance, the soul, too, disappears. But this is not all. Not only has man no soul, the monist proudly vaunts, but the *universe has no God*—and *Christianity* is only an *aggregate of antiquated dogmas*, drawn from a storehouse of impossible and silly myths. Mysticism means the ruin of reason, and rather than let this come to pass, may all mythological fables, miracles, revelations, religious extravagances and beliefs be flung to the wind without further ado! The very idea of a personal God has been rendered untenable by the progress of the monistic knowledge of nature, and the obsolete concept is doomed to lose its prestige in the domain of truly scientific philosophy even before the end of the nineteenth century. The God of Christianity, so it appears, is a gaseous vertebrate, while, on the other hand, the only God acknowledged by the monist is the infinite sum of all atomic forces and ether vibrations.

II. But few words, I believe, will be needed to state *our position regarding this kind of Darwinism*.

It is true, in his preface to the history of man's development (ed. 1874), Haeckel maintains: "In the tremendous battle for civilization in which we have the good fortune to fight, we cannot bring a more potent ally to struggling truth than anthropogeny (science of man's development). For this is the heavy artillery in the battle for truth. Long lines of dualistic sophisms fall powerless beneath the chain-shot of the monistic artillery. The superb palace of the Roman hierarchy, the powerful castle of infallible dogma collapses like a house of cards. Whole libraries of ecclesiastical wisdom and sophistry dwindle into nothingness when brought to light by the history of development." But such senseless outbursts of the prophet of Jena should make no impression on a sober mind. To a Catholic the matter is plain. For

(1) *Realistic monism denies the existence of a personal Creator and the immortality of the human soul.* Haeckel himself declared that these two ideas, being antagonistic to his world-view, can in no wise be adjusted to the monistic system.

(2) *Realistic monism maintains that the development of the universe with all in it that is and lives, the human mind not excluded, is due to a fortuitous concourse of atoms, and that all has sprung and risen from the unfathomable abyss of chaos.*

True scientists like Mr. James Hall, the famous geologist, find even in the laws of inorganic nature the evident footprints of a Creator's beneficence and wisdom. Says Mr. Hall in his magnificent work: "The changes here enumerated are but a few among the great series of changes which have brought the surface of the earth into its present condition; which have formed the mountain chains, excavated the deep

valleys, or piled up among its successive strata materials fitted for our use and instruction. Every successive change has left its monuments, upon which is recorded the history of the past: that history shows the operation of a uniform law, the influence of a mighty design in the construction of the stupendous fabric on which we exist. And though we are not disposed to say, that the Creator has through all ages been fashioning and preparing the earth for the abode of man, or storing up its mineral treasures for his use alone, we can yet see the operation of his divine law and recognize in its *harmonious adaptation the result of eternal Beneficence and Wisdom.*¹⁾

(3) *Realistic monism uproots the most elementary principles of the moral order.* Human liberty no longer exists. There is no conscience, no moral law, either human or divine, no retribution, no avenger. The social instincts of animals form the primary source of morals for man. Like proud Prometheus of old, monism boldly hurls defiance into the very face of God, and says:

"Here seated I form beings
Like unto mine image,
To suffer, to weep,
To rejoice and be happy
And to condemn thee
As I do."—Goethe.

Haeckelism is therefore the mainstay of anarchy and social democracy.

" Cross destroyers
Shatter also royal crowns,
And the smoke of charred temples
Circles up from burning thrones."
—Weber's *Dreizehnlinden*.

¹⁾ "Geology of New York", vol. IV., 1843, p. 525.

How much more splendid, uniform and majestic is the Christian world-view, recognizing in God the beginning and end of all! With consolation and blessing it hovers like an angel of peace over this valley of tears, gently pressing into the hands of each weary pilgrim the triple key of faith, hope and love, which alone unlock the portals of the great land of promise.

We know, therefore, what we are to think of Darwinism in its second acceptance. *A doctrine which applies the Darwinian theory of natural selection to the universe is directly and in every respect opposed to the Christian world-view, and is, therefore, to be rejected.*

It is sad to acknowledge that the atheist of Jena has almost everywhere gained so powerful an influence. Even of late this has become strikingly manifest on the occasion of his 70th birthday, and in the Free-thinkers' Congress at Rome. On the other hand, we may rest assured that his reputation and influence will not long survive him. In spite of a number of truly valuable discoveries due to his researches, Haeckel's name and fame have lost much of the regard they once commanded in the world of *leading* scientists. In fact, he is a scientific swindler and visionary, an adroit manipulator and unscrupulous *manufacturer of facts*, if such be needed for the support of his theories. It is well known that in the first edition of his "Natural History of Creation," Haeckel had three copies of the same *cliché* printed side by side, designating the first of the three perfectly similar figures as the embryo of a dog, the second of a chick, and the third of a turtle. Prof. W. His at Leipzig discovered the fraud and resolutely declared "that the procedure of Prof. Haeckel is and remains a *frivolous play with facts*, even more

dangerous than his play with words. . . . The latter is open to universal criticism, but the former can be detected only by the specialist; and it is all the more unpardonable, since Haeckel is conscious of the extensive influence he exercises. Let others honor him as their active and reckless party leader; in my opinion he has, through his mode of procedure, renounced all rights of being numbered as an equal among earnest investigators." ¹⁾

We shall in the course of our essay draw attention to other inventions of Haeckel's fertile fancy. Suffice it to recall the unhappy fate of *Haeckel's famous Bathybius*, at the discovery of which, by Huxley, Haeckel triumphantly exclaimed: "Now we are enabled to reduce the phenomena of life to very simple forms," (complex masses of slime brought up in sea dredgings). As a matter of fact, *Bathybius Haeckelii* proved to be no living being whatsoever, but only an ordinary inorganic precipitate. Such things are not easily forgotten. *Haeckel's monism itself* has been felt to be a *defeat*. Prof. Hensen says: "We can hardly conceive of anything more barren and unfertile than Haeckel's monism. He might have spared us this defeat."

"O their speech is only rustling,

As of winds or waters wild;

Revelation came to mortals

Through the teaching of a child."

— *Weber's Dreizehnlinden.*

¹⁾ Fleischmann, "Descendenztheorie," p. 10.

PART III.

THE APPLICATION OF DARWIN'S THEORY TO MAN AND OUR ATTITUDE TOWARDS IT, OR THE TRUE ORIGIN OF MAN'S SOUL AND BODY.

CHAPTER IV.

“Man a Higher Beast.”

“THE question of questions for mankind — the problem which underlies all others, and is more deeply interesting than any other — is the ascertainment of the place which man occupies in nature and of his relations to the universe of things. Whence our race has come, what are the limits of our power over nature and of nature's power over us, to what goal we are tending, are the problems which present themselves anew and with undiminished interest to every man born into the world.”¹⁾ Such are the words with which Huxley puts before his readers the question of man's relation to animals.

Huxley is right in emphasizing its importance. For the question of man's origin is not only one of the deepest interest to our intellect, but also of *vital significance for our moral life*. It decides our end and destiny.

What is the origin of man according to Darwin's principle of natural selection? Darwin himself makes

¹⁾ Huxley, “Man's Place in Nature,” Humboldt ed., p. 213.

answer to this question in the following terms: "He who is not content to look, like a savage, at the phenomena of nature as disconnected, cannot any longer believe that man is the work of a separate act of creation. He will be forced to admit that the close resemblance of the embryo of man to that, for instance, of a dog — the construction of his skull, limbs and whole frame on the same plan with that of other (!) mammals . . . and a crowd of analogous facts — all point in the plainest manner to the conclusion that man is co-descendant with other mammals of a common progenitor." In fact, from Darwin's point of view man originally derived his existence from a lower animal — of course, at the judicious guidance of blind and impotent natural selection. For, "man incessantly presents individual differences in all parts of his body and in his mental faculties." . . . He "tends to increase at a greater rate than his means of subsistence; consequently he is occasionally subjected to a severe struggle for existence, and natural selection will have effected whatever lies within its scope." ¹⁾ *Man's intellectual powers and moral faculties are also due to natural selection.* "The first foundation or origin of the moral sense lies in the social instincts, including sympathy, and these instincts *no doubt* were primarily gained, as in the case of the lower animals, through natural selection." ²⁾

Darwin even claims to recognize in "the dim recesses of time" a physical portrait (rather caricature) of man's progenitors. "The early progenitors of man,"

¹⁾ "The Descent of Man," New York, (Science edition) 1902, p. 781. .

²⁾ "The Descent of Man," p. 788.

he says, "must have been once covered with hair, both sexes having beards; their ears were probably pointed and capable of movement; and their bodies were provided with a tail, having the proper muscles . . . The intestine gave forth a much larger cæcum than that now existing. The foot was then prehensile, judging from the condition of the great toe in the fœtus; and our progenitors, no doubt, were arboreal in their habits, and frequented some warm, forest-clad land. The males had great canine teeth, which served them as formidable weapons. At a much earlier period . . . the eye was protected by a third eyelid or nictitating membrane. At a still earlier period the progenitors of man must have been aquatic in their habits, for morphology plainly tells us that our lungs consist of a modified swim-bladder, which once served as a float." ¹⁾

Haeckel's description of man's progenitors is, of course, still more accurate. He and his friends, as, for instance, Wiedersheim, have carefully measured the length of the alimentary canal of their ape-ancestors, and have come to the conclusion that it was much more capacious than now and that they subsisted exclusively upon vegetables. They testify, moreover, to the fact that, not unlike Polyphemus of old, their worthy sires, besides having two eyes looking sideways (which Polyphemus did not have), could boast of another presumably huge one in the middle of their noble foreheads!

Haeckel, too, is perfectly acquainted with the twenty-one stages which, as he maintains, constitute the history of the human species. But, as Conn reminds us, "it is needless here to enumerate these stages,

¹⁾ "The Descent of Man," p. 215.

for little by little has it become evident that *most of them were guesses*, or at least founded on very insufficient data. Of these twenty-one stages *more than half have been proved to be wrong* and in regard to some of the others it is questionable. This attempt of Haeckel, made with such boldness as almost to inspire belief, is thus a *failure*.¹⁾

Huxley, who almost ten years before the publication of Darwin's "Descent of Man" applied the principle of natural selection to the human species, completes the description of man's progenitors by sketching a vivid picture of their struggle for existence. They were born into the world, multiplied without limitations, and died at the side of the mammoth and the buffalo, the hyena and the lion, whose life and habits in no way differed from their own. The weakest and most maladroit perished, while the tough and cunning specimens survived. Life was only the felicitous outcome of an incessant struggle with death, and outside the narrow, but temporary, barriers of the family fierce and unrelenting warfare, carried on between the individual and the class, was the natural and normal state of existence; while the species 'man' was drifting and battling like the rest with the general current of development, keeping his head above water as best he could, heedless of the whence and the whither.

In the struggle for existence, therefore, it was the good fortune of the human species to cope successfully with its "co-animals" and through a constant survival of the fittest, to develop step by step from mere sensation to intelligence and reason, from blind instinct to morality and virtue into a higher, a nobler — beast.

¹⁾ 1. c. p. 149.

"At the origin, monkey and man were but one, a division takes place, the fissure has grown, has become an abyss . . . like the cañons of the Colorado . . . which sooner or later will become impassable by the disappearance, on the one hand, of the present anthropoids, and on the other, of the lowest human races, and will leave man isolated and majestic, proclaiming himself with pride the king of creation."

"Let us not blush, then, for our ancestors; we have been monkeys, as those formerly have been reptiles, fish, nay worms or crustaceans. But it was a long time ago, and we have grown; evolution, I say, has been very prodigal of its favors in the struggle for existence, she has given all the advantages to us. Our rivals of yesterday are at our mercy, we let those perish that displease us, we create new species (?) of which we have need. We reign over the whole planet, fashioning things to our will, piercing the isthmus, exploiting the seas, searching the air, annulling distance, wringing from the earth her secular secrets. Our aspirations, our thoughts, our actions, have no bounds. Everything pivots around us." ¹⁾

¹⁾ Topinard, "The Last Steps in the Genealogy of Man," Annual Report of the Smithsonian Institution, Washington, 1890, p. 693.

In another passage of the same paper Topinard has the following characteristic phrases: "We have descended, then, from the monkeys, or at least everything appears as if we have descended from them. From what monkey known or unknown? I do not know: No one of the present anthropoids has assuredly been our ancestor. From several monkeys or a single one? I do not know; and also do not know yet if I am monogenistic or polygenistic." Poor fellow! Nor can we tell you. Perhaps Dr. Friedenthal could. For he maintained of late: "We do not only descend from apes, but we are apes ourselves!"

This is the Darwinian solution of the problem "which underlies all others," this the answer to "the question of questions for mankind," this the far-famed and frivolous elenchus of evolution, which legions of more or less famous and infamous "ape-lads" have trumpeted to the gullible masses, amid the noisy uproar of their own conflicting phrases, as the grand dogma¹⁾ of modern science.

Now, it is clear as noonlight that a doctrine of this description is not only very "distasteful" but "*highly irreligious*" and *detrimental to the highest interests of the human race*, involving, as it does, the *total wreck and ruin of religion*. For, if man is nothing else than a higher beast, it is plain that all moral ties are severed, the foundations of family and state are undermined, and society at large falls a ready victim to the demon of *anarchism* and *complete demoralization*. So striking and inevitable are these outrageous conclusions that even *Darwin, Haeckel and their accomplices* are not slow to *avow them* in the most frank and candid terms. Yea, in their insolence they go so far as to fill entire pages with low and trashy matter, such as no decent man can read without a blush.

¹⁾ Haeckel considers this grand dogma as the most splendid result of his doctrine of development: "I am entirely convinced," he says in one of his lectures, "that the science of the twentieth century will not only accept our doctrine of development, but will celebrate it as the most significant intellectual achievement of our time, for the illuminating beams of this sun have scattered the heavy clouds of ignorance and superstition which hitherto shrouded in impenetrable darkness the most important of all scientific problems, that of the origin of man, of his true essence, and of his place in nature." (Smithsonian Institution, Washington, 1899, p. 480).

It is, nevertheless, absolutely necessary to subject the present question to a more careful examination. For, it is *in the first place* an incontestable fact, that the belief in man's animal descent counts *numbers of advocates* in all classes of society. Besides, the champions of this doctrine — not a few of them professional dissemblers — are shrewd enough to shroud themselves in the cloak of "*modern science*," and to inspire every phrase they utter with a *sincerity* and *love of truth* that almost appeals to the heart. It is, indeed, necessary to tear the masks from their insolent faces, if we wish to recognize their real and undisguised features.

Finally, the attempt has been frequently made to impose upon the public and especially upon the *Catholic* public by asserting that modern science has proved at least one fact beyond the shadow of a doubt, namely, *that the body of man descended from the ape*.

Let us, accordingly, ask once more: *What are we to think of man's animal descent?*

Man is composed of soul and body, and so the question naturally falls into two heads, each of which deserves careful attention and calls for a separate discussion.

I. *Are there any proofs for the animal descent of man's soul?*

II. *Has science, as a matter of fact, established the animal descent of man's body?*

CHAPTER V.

The Origin of Man's Soul.

PROF. Haeckel himself has obliged us in summarizing the chief arguments in favor of the animal descent of the human soul. This he has done in an admirable discourse delivered at the fourth International Congress of Zoologists at Cambridge, England, August 26, 1898. The title of the lecture reads, "*On our present knowledge of the origin of man.*" The lecture, originally printed at Bonn, has also been put before the American public by the Smithsonian Institution,¹) in accordance (!?) with its motto: "For the increase and diffusion of knowledge among men."

At present, only that part of Haeckel's discourse is of interest to us in which he adduces his "impregnable" arguments in support of the theory that man's soul sprang from the soul of the ape.

"The wonderful 'soul of man,' " Haeckel begins, "was thought to be a peculiar being, and today it seems to many impossible that it should have been historically developed from the 'soul of the ape!' *But, in the first place*, the wonderful discoveries of *comparative anatomy* [*anatomy of the soul?*] during the last ten years informs us for the first time that the minute as well as the gross structure of the brain of man is the same as [*ought to be: is quite different from*] that of the anthropoid apes, the unimportant [*ought to be: very*

¹) Annual Report, Washington, 1899, pp. 461-480.

important] difference in shape and size of single parts that exist between the two being less [*ought to be: much greater*] than the corresponding difference between the anthropoid and the lowest apes of the old world. . . .

“*Secondly, comparative ontogeny* [development of the individual] teaches us that the very high complex brain of man has developed from the same rudimentary form as that of all other (!) vertebrate animals. . . . [*What has this to do with the soul?*]

“*Thirdly, comparative physiology* shows us by observation and experiment that the total functions of the brain, even consciousness and the so-called higher mental faculties [*the so-called higher mental faculties are not functions of the brain*] together with reflex acts, are in man preceded by the same physical and chemical phenomena as in all other (!) mammals.

“*Fourthly, . . . we learn from comparative pathology* that all so-called ‘mental diseases’ [*ought to be: diseases of the brain*] in man are determined by material changes in the material of the brain just as they are in the nearest related mammals.”

Having enumerated these clinching “arguments,” Prof. Haeckel throws open another gate of his “proof-factory”: “An unprejudiced and critical [*ought to be: prejudiced and uncritical*] comparison confirms here also Huxley’s law: the *psychological differences between man and the anthropoid apes* are less [*ought to be: infinitely greater*] than the corresponding differences between the anthropoid and the lowest apes. And this physiological fact [*ought to be: dream*] corresponds exactly [*ought to be: not at all*] with the results of an anatomical examination of the differences found in the structure of the cortex of the brain, the most important

organ (!) of the soul. The deep significance of this information will be clearer to us when we consider the extraordinary differences in mental capacity that exist within the human species itself. There we see, high above, a Goethe and a Shakespeare, a Darwin and a Lamarck (*Haeckel?*), a Spinoza and an Aristotle, and then, far below, a Veddah and an Akkah, a Bushman and a Patagonian. The enormous difference between these highest and lowest representatives of the human race is much greater [*ought to be: is only a difference of degree, not of kind*], than between the latter and the anthropoid apes."

Then the clumsy gates of Haeckel's proof-factory close for a moment. Arms akimbo and eyes cast down and assuming an air of "wisdom supernal," the Prophet of Jena sees before him in spirit a vast multitude of men unfortunate enough to spurn the sweeping power of his iron logic, and, stirred to its very depth, the noble soul of Haeckel, whose *only* aim in life has ever been the defense and spread of truth, is verily "cleft in twain" by sadness and holy indignation. "Since in spite of this," *he bitterly complains*, "we find that the soul of man is today regarded in the widest circles as an especial being and as the most important witness against the decried doctrine of the descent of man from apes, we explain it on the one hand by the wretched condition of so-called psychology, and on the other by the widespread superstition concerning the immortality of the soul." (Sic!)

But not yet has Herr Haeckel emptied the vials of his wrath. With a look of sovereign contempt he frowns upon the "psychology of today," which he styles "a fantastic metaphysics," teeming with "spec-

ulative errors and religious dogmas." He, then, stigmatizes most of the so-called psychologists of today as a set of "stiff-necked" ignoramuses, "who know nothing at all of the brain and organs of special sense," "nothing at all of the actual localization (!) of the separate (!) mental faculties."

Finally, with one last and desperate attempt the arsenal of his "arguments" reopens, and fully confident of final victory, the enlightened votary of Modern Science breaks forth into another gush of sentiment, concluding his declamation with a reference to one of "the most important discoveries of the 19th century": Flechsig's famous "seats of thought" to be found in the lobes of the cerebral hemispheres and established by experimental science as "the only true apparatus of our mental life." (Sic!).

Haeckel's grand argumentation is finished. And what a cloak of specious cogency it wears! Indeed, is there any one among my readers who does not tremble before the formidable array of facts and arguments set up by a man whose numerous volumes have appeared in many translations and have reached impressions numbering 100,000 copies each? Well,

"Let us see what the learned wag maintains
With such a prodigal waste of brains."

— *Longfellow.*

For also Ernest Haeckel is one of the oracular bigwigs of whom Goethe sings:

"Put on a periwig of million locks,
Fix on thy foot a pair of giant socks:
Thou still remainest what thou art."

And what is Haeckel? We have said it. Herr Haeckel of Jena is a *pretentious humbug*, an *adept* in

verbal jugglery, who has always learned his lessons well by heart, being as blissfully *ignorant of logic and psychology* as the whilom monkeys of his noble lineage. To wreak his vengeance on the God of Christianity, this apostle of atheism invites the masses to set at naught the Ten Commandments, and, if possible, to efface every vestige of religion, substituting in their stead a new gospel of liberation — *the moral code of the lowest savage*.

It is impossible to mention and to discuss the low moral conclusions which Haeckel openly deduced from the animal descent of the human soul. We must confine ourselves to his argumentation quoted above.

1. *To speak about the immortality of the human soul as a superstition* is meaningless twaddle. Such language ill befits a man of more than 70 years, tottering on the brink of the grave, who has done so much to undermine the principles of Christianity. The belief in a never-dying soul is one of the most sacred and venerable heirlooms of the human race; *it is a conviction based on the spirituality of the soul and on the infallible word of revelation*. Such arguments, of course, are passed off with a disdainful smile by men of Haeckel's calibre.

2. As has been already stated, *most of the facts alleged by Haeckel are no facts at all*. In the third part of this section we shall have chances enough to verify this statement. Suffice it here to recall Ranke's word that the difference between the brain of man and that of the highest ape is *considerable* and that *the ape's brain is by far inferior to the brain even of a new-born child*. Yes, the difference between the brains of man and ape is still more marked than that between Ranke and

Haeckel as scientific investigators. Which certainly means very much.

3. Even supposing Haeckel's *four facts* concerning the brain to be genuine and no creations of his playful fancy, *they would at most indicate a certain similarity between the brain of man and that of the ape.* But to infer that the one owed its origin to the other or even that the human soul descended from the soul of the monkey would be *illogical*. To speak of the brain as identical with the soul is egregious nonsense. *The brain is a composite of matter, pure and simple, an intricate structure of thousands and millions of cells and fibres and of innumerable, complex molecules, while the soul is an inextended, simple, purely spiritual substance.*

4. Next comes *Flechsig's grand discovery*—a huge joke for a change. *The following reflections will make the matter plain.* In 1894 the physiologist Flechsig startled the scientific world by announcing that he had discovered *three distinct organs of thought*, seated in *separate* regions of the brain, one serving for consciousness, another for the moral and aesthetic sense, and a third for mental apprehension and ratiocination. To justify this psychological monstrosity Flechsig alleged the following fact: Two kinds of fibres must be distinguished in the brain: *fibres of projection*, which connect the brain with the muscles and end-organs of sense, and *fibres of association* joining different parts of the brain. Now, according to Flechsig, there are *three centres in the brain* which contain *only* fibres of association and no fibres of projection. *These centres are, therefore, not directly connected with the muscles and end-organs of sense, and — so he concluded — THEY ARE THE ORGANS OF THOUGHT!*

Another "graceful bound" of vicious reasoning! And, I venture to presume the reader has not failed to notice that Flechsig's phenomenal stroke of logic can only be due to a derangement of the brain. Otherwise, he will probably be at a loss to understand how a scientist of our enlightened age could so far forget himself as to indulge in such fanciful conceptions.

*The facts, first of all, which Flechsig alleges, are dreams. The best anatomists of today declare that there is no region in the cerebral cortex which does not contain fibres of projection as well as fibres of association. Granted, moreover, Flechsig's fictions happened to agree with facts, the only conclusion he could draw in that case, without committing himself, would be that the different parts of the brain are anatomically connected to effect, as Wundt has it, "the functional unity of separate cortical areas."*¹⁾ But there can evidently be no question of splitting the soul into three parts like a log of wood and then to identify it with those parts of the brain which are not directly connected with the end-organs of sensation and motion. In the third place, Flechsig betrays a lamentable ignorance of the most elementary psychological processes by materially separating the power of ratiocination from the other faculties of the soul. We suspect, indeed, that Flechsig's and Haeckel's "cerebral lobes of ratiocination" have attained as much proficiency in logical thought as those of their cousins in Hagenbeck's menagerie.

Such are some of the reasons that induce us to reject Haeckel's arguments for the animal descent of the human soul. The difference between the soul of man and the soul of the animal is one of kind, not merely of

¹⁾ "Principles of Physiological Psychology," 5th ed. p. 214.

degree. Man's soul is an inextended, immaterial, spiritual substance, while the soul of the animal is extended and intrinsically dependent on the material body. Man's soul survives the body, not so the animal soul which ceases to exist with the body's dissolution.

"Only man can do the impossible

He winnows the truth, he chooses and judges."

— *Goethe.*

"Made to God's image and likeness," man's soul is the only being, here on earth, endowed with intelligence and free will; thus to "let him have dominion over the fishes of the sea and the fowls of the air, and the beasts, and the whole earth."

CHAPTER VI.

The "First Main Argument" for the Animal Descent of Man's Body.

THE soul of man does not owe its existence to an evolutionary development from the animal soul, but is the very breath of God, the sublime and immediate work of his creative love.

This doctrine of paramount importance for the higher destiny of man is inculcated by *our holy Faith* in the most vigorous terms, confirmed by *reason* and *indelibly written in the heart* of every human being. Indeed, all that is noble and lofty in our nature shudders at the thought that we should be no more than a better sort of apes. And we must emphatically reject the foolish idea of Huxley that this innermost conviction of our divine origin is due to the "blinding influences of traditional prejudice." This *Darwin himself* must have felt when, at the end of his lengthy work, he strives to comfort and console his readers by feigning to bring them over the "highly distasteful" conclusions which in the face of logical sequence he could no more evade. "For my own part," Darwin thinks, "I would as soon be descended from that heroic little monkey who braved his dreaded enemy in order to save the life of his keeper, or from that old baboon who, descending from the mountains, carried away in triumph his young comrade from a crowd of astonished dogs—as from a savage who delights to torture his enemies,

offers up bloody sacrifices, practices infanticide without remorse, treats his wives like slaves, knows no decency, and is haunted by the grossest superstitions." ¹⁾

But such ridiculous phrases should not in the least affect a sober-minded man. For, there exists *this immense difference* between the heroic little monkey and the cruel and superstitious savage that the latter, endowed with intelligence and free will, is possessed of an *immortal spirit*, while the former is a *mere sense-being* which will enjoy but a *shortlived existence*. While congratulating the enthusiastic adherents of Darwin on their prided ancestry, we, as reasonable men, rather than claim descent from the brutal gorilla and chimpanzee, can not help looking back with pride upon Adam and Eve as the first progenitors of the human race.

But, since the human substance is a composite of soul *and* body, the question naturally presents itself whether, perhaps, the Darwinian doctrine might not be applied to the *origin of the human body*. This question, it must be borne in mind, is *totally different* from the preceding. Though it is entirely out of the question that the human soul has developed from that of the animal, still *there is no absurdity in the idea* that God made use of merely natural causes to prepare, as time went on, the body of man for the soul that was, at some future date, to take up its abode there. But this is a *mere possibility* which on account of the intimate union of body and soul does not even seem probable. At any rate, even *if* the assertion of the animal descent of the human body would have no difficulties to encounter in itself, still we would prefer

¹⁾ "The Descent of Man," p. 796.

to see it corroborated *by facts*, and therefore we raise the question: *Has science proved that the human body descended from a lower form?*

It would be useless and impossible to offer our readers that medley of sophisticated arguments which the enemies of Christianity have ingeniously composed in support of their favorite theory. For our present purpose we deem it sufficient to examine *the two main proofs* which above all others are considered decisive.¹⁾

The *first proof* is suggested by Darwin, when he says that "*man still bears in his bodily frame the indelible stamp of his lowly origin.*"²⁾ The resemblance man bears to the ape and the similar development of both is thought to furnish sufficient evidence of a similar origin. We grant that many points of striking similarity can be traced in the body of man and ape. "As far as structure is concerned," says Ranke, "*the similarity between man and the anthropoid apes is so great that in many points we may call it typical.*" And what is true of the structure is still more so, and often in a higher degree, of their organic functions."³⁾ This is the reason why Linné considered man according to his body as the highest representative of the class of mammals. Indeed, we may compare all the principal organs of the human body with those of the simian — as the heart, lungs, bones, muscles, even brain and eye — and we shall invariably discover that, *in a general way, all are shaped and moulded upon the same pattern*, evincing everywhere a marvelous harmony in action and congruity of parts.

¹⁾ Cf. our paper on "Zoology and the Origin of Man," *The Catholic Mind*, (Messenger, New York), No. 19.

²⁾ "The Descent of Man," p. 797.

³⁾ "Der Mensch," 2. ed., vol. I., p. 487.

But, we ask, does this twofold similarity of structure and function prove to evidence that man descends from an ape or any other ape-like mammal? We answer: No! and in support of our contention advance two weighty reasons, before which the alleged argument of similarity, whether real or fictitious, must necessarily fall.

(1) Side by side with the similarities, to which a world of importance is accorded by the "Apostles of Descent," *so many points of divergence* betray themselves at every turn that the attempt to prove a direct descent of the one from the other looks much like weaving a rope of sand.

The main points of difference are, shortly, these:

(a) *The brain of man exhibits a development incomparably superior to that of the highest ape. This fact appears, first of all, from the dimensions of the skull-cap which encloses the brain.*

The capacity of the skull-cap of man and ape is shown in the following table ¹⁾ taken from Ranke :

Skull's Origin.	Number of Skulls	Average (Cb. Cm.)	Minimum (Cb. Cm.)	Maximum (Cb. Cm.)
Bavarian (male).....	100	1503	1260	1780
Bavarian (female).....	100	1535	1100	1683
Gorilla (male).....	16	498	461	605
Gorilla (female).....	3	458	383	563
Chimpanzee (male).....	7	409	371	460
Chimpanzee (female).....	3	392	376	413
Orang (male).....	3	426	420	464
Orang (female).....	1	406		

¹⁾ l. c. vol. I. p. 409.

Circumference of the skull ¹⁾	Caucasian.....	550 mm.
“ “ “.....	Negro	510 mm.
“ “ “.....	Gorilla ²⁾	340 mm.
“ “ “.....	Orang	320 mm.

Thus the skull-cap of man is about three times as large as that of the ape, while the circumference of the ape's entire skull measures about twice as much as that of man. *Furthermore*, the human brain is on the average three times heavier than the brain of the ape, and upon a close comparison of the weight of the body, we find that in man it is the 37th part, while in the ape it is only the 100th part of the entire body-weight. This difference appears still more striking if the two most prominent parts of the brain are compared. — In this case, the brain of man weighs 16—18 times more than that of the ape! *Finally*, the number of convolutions which are observed in the ape's brain, is much smaller than in man, so much so, that according to Wagner's measurements, the brain surface in man is found to be four times larger.³⁾

“The face of man,” says Ranke, “slides, as it were, down from the forehead and appears as an appendix to the front half of the skull. But the gorilla's face, on the contrary, protrudes from the skull, which in return slides almost entirely backwards from the face. By a cross-cut one may sever the whole face from the skull, except a very small part near the sockets, without being forced to open up the interior of the skull. It is only on account of its protruding, strongly developed lower parts that the small skull-cap of the animal can *mask as a kind of human face*.”³⁾

¹⁾ 1. c. vol. II. p. 7.

²⁾ cf. Wilhelm Wundt, “*Physiologische Psychologie*”, 5. ed., 1902, vol. I., p. 289.

³⁾ Ranke, 1. c., vol. I., p. 401.

In short: "*The main differences between the brain of man and that of apes lies in this that in man the brain is much more and the teeth much less developed than in apes, which, on the contrary, possess but a small brain and a powerful set of teeth.*"¹⁾

(b) Similarly remarkable is the difference in regard to *the limbs and the trunk of the ape*. If we suppose the length of the body to be 100, we have according to Ranke, the following proportions:²⁾

Part of the body.	Gorilla.	Chimpan- zee.	Orang.	Negro.
Trunk	50.4	44.80	44.50	36.27
Arm and hand..	64.9	67.67	80.72	45.43
Leg	34.9	35.20	34.72	48.93
Hand	17.4	23.00	22.8	11.6
Foot	20.4	20.5	25.5	14.5

Especially the trunk of the ape is much more developed than the corresponding part in man. Then the ape has much shorter legs and much longer arms than man. The reason is evident, since both arms and legs serve the ape as means of locomotion. It has been asserted that the anthropoid apes while walking preserve an erect posture, just as man does. *This is not so.* Ranke assures us: "The ability of the anthropoid to walk erectly is by no means superior to that of a dancing bear . . . Brehm is perfectly right when he says . . . that man alone . . . has an erect walk, no ape walks upright." ³⁾ Finally, the ape is blest with four hands,

¹⁾ Ranke, 1. c., vol. I., p. 404.

²⁾ 1. c., vol. II., p. 7-8.

³⁾ 1. c. vol. II., p. 32.

while man has two hands and two feet. May the Darwinians ever so energetically shake their heads to this statement, it is all in vain. For only in man the hands are *exclusively* organs for grasping and the feet *exclusively* organs of support.

The most striking differences between man and anthropoid apes are summarized by Ranke as follows: "The gorilla's head leaning forward, hangs down from the spinal column, and his chinless snout, equipped with powerful teeth, touches the breast-bone. Man's head is round, and, resting on a free neck, balances unrestrained upon the spinal column. The gorilla's body, without a waist, swells out barrel-shaped, and when straightened up finds no sufficient support on the pelvis; the back-bone, tailless as in man, but almost straight, loses itself without nape or neck formation properly so-called in the rear part of the head and without protuberance of the gluteal region in the flat thighs. Man's body is slightly molded, like an hour-glass, the chest and abdomen meeting to form the waist where they are narrowest; the abdominal viscera are perfectly supported in the pelvis as in a plate; and elegance is decidedly gained by the double S-line, which, curving alternately convex and concave, passes from the crown through the neck and nape, down the back to the spine and the gluteal region. The normal position of the gorilla shows us a plump, bear-like trunk, carried by short, crooked legs and by arms which serve as crutches and touch the ground with the knuckles of the turned-in fingers. The posture of the body is perfectly straight in man, it rests on the legs as on columns when he stands upright, and his hands hang down on both sides always ready for use.

The gorilla is thickly covered with hair, while man's body on the whole is naked." ¹⁾

Such facts evidently go to show that there exists a *considerable difference* between the body of man and that of the ape. On comparing the *skeletons* of man and of the anthropoid ape (Plate 1) Ranke even goes so far as to say: "We may place side by side and compare one bone after the other, and we shall find that everywhere the same general form and arrangement prevail. But in particular there is no bone, be it ever so small, nay, not even the smallest particle of bone, in which the general agreement in structure and function would pass over into real identity. By its characteristic form we are able to tell each single bone of man from the respective bone of any anthropoid ape or mammal. In the most general sense of the word, it is true, each bone and organ of man could be styled "ape-like," . . . but nowhere does this similarity go so far that the form peculiar to man would pass over into the form which is peculiar to the ape." ²⁾ In point of fact, out of the one hundred and twenty-three ape-like forms which Wiedersheim maintained to have discovered in the human body, Ranke does not recognize a single one as genuine; and Virchow declared at the Congress of Wiesbaden, that of all animal-like forms in the human body hardly more than *one* deserves attention. But even this one is so minute and insignificant that it is not worth our while to consider it earnestly. Indeed, as Virchow says, "*the differences between man and monkey are so wide that almost any fragment is sufficient to diagnose them.*" ³⁾

¹⁾ 1. c., vol. II., p. 213.

²⁾ 1. c., vol. I., p. 437.

³⁾ Cf. Report of the Smithsonian Institution, Washington, 1889, p. 566.

Consequently, if Darwinians maintain that the similarity between man and the ape is a positive proof of their common descent, we are perfectly justified in returning the argument by asserting that the dissimilarity between the two proves that they certainly do not descend from one another.

(2) But we may go still further. Let us abstract for a moment from the differences between the body of man and that of the ape and freely grant that the similarity between both is as striking as Darwinians would have us believe. *In what case would such a similarity prove descent?* Only then, if no other reasonable explanation, but descent, would be offered to account for the striking traces of resemblance. For as long as I have two equally probable explanations of a fact I am on no condition entitled to set up either of them as the only true one. Now, over and above the solution attempted by Darwinians to explain the similarity between man and ape, *another* may be added still more probable than the one to which our adversaries resort. We know that the whole universe has been constructed by divine wisdom and omnipotence upon a unique and uniform design and that it is destined to lie subject at the feet of man, its noble sovereign, the king of the visible world. Should we then be surprised to find that man, the choicest jewel of the visible creation, unites within himself, and in a pre-eminent degree all the splendor and perfections of the inferior works of God? Even Ranke did not fail to realize at least in part this sublime truth of the Christian world-view when he says: "*We look upon man as the representative of the entire animal kingdom, because all organs and forms of structure distributed among*

diverse animals are found focussed and centralized in the microcosm of the human body." ¹⁾

From all that has been said hitherto it would appear that *the first main argument of Darwinians brought in support of man's animal descent rests on rather sandy foundations.* For (1) *the difference between man and ape is so marked and apparent that there can be no thought of a direct descent of the one from the other.* (2) *The similarity which actually exists between man and ape finds a better explanation in the fact that the one self-same Creator drew up and executed the plan of this world.* Quite in harmony with this plan is the phenomenon, that in their general structure the body of man as well as that of the ape presents *the same fundamental idea* of the Great Designer, yet so that the human body surpasses all the rest of God's visible works in beauty and perfection. Here the same laws of proportion hold good that obtain in every genuine work of art, in which the unity of the whole is chastened and relieved by the symmetry of all its parts.

The conclusion reached in the present chapter is corroborated by the fact that *there are no ape-like forms among existing men.* The enumeration of a few data is sufficient for our purpose: ²⁾

(1) The differences in bodily proportions that have been observed in various races of men, are *individual* variations of development, and in no wise adapted to establish a distinction between more and less ape-like races. "All the hopes and efforts to discover a series of bodily formations which would lead from the most ape-like savages to the least ape-like Europeans, have

¹⁾ 1. c., vol. II., p. 6.

²⁾ Cf. the Catholic Mind, 1. c., p. 486—488.

till now resulted in utter failure.”¹⁾ Very striking is the utterance of one of the highest authorities on this question, A. Weisbach, who maintains that the ape-like forms of organs actually found in some individuals are not confined to a single race or nation, but spread and distributed over all of them. Ranke himself has found that precisely the “lowest savages” present in their bodily proportions the furthest extreme from those of the ape.

(2) The so-called inborn deformities or abnormal developments of certain individuals, as “haired and tailed” men, and so forth, are very rare and mostly due to irregularities in the development of the embryo. Tailed ape-men, in the proper sense of the word, do not exist. “In our own days observations have furnished us with an invulnerable argument that no race of men with tails exists on this earth.”²⁾ The whole fable is principally due to the fact that certain tribes have the custom of adorning themselves with the tails of animals or similar appendages. “Certain formations, similar to tails in their proper sense, that have sometimes been found at the end of man’s backbone, have been thoroughly studied and explained by M. Bartels. The conclusions of this author make it evident that all such formations are genuine deformities, abnormally developed remnants of the individual’s embryonic life.”³⁾ “Such deformities must be considered as inborn diseases.”⁴⁾

Moreover, Linné’s “*homo ferus*” has no existence

¹⁾ Ranke, 1. c., Vol. II, p. 79.

²⁾ Ranke, Vol. I, p. 181.

³⁾ Ranke, 1. c., Vol. I, p. 182.

⁴⁾ Ranke, 1. c., Vol. I, p. 187.

in reality. Ranke says that it is "foolish"¹⁾ to believe in this fiction. "It is humbug and fraud" to designate such creatures as Krao²⁾ as missing links. Finally, the famous Cretins and Microcephali are pathological symptoms and cannot be explained as atavistic forms. For, as Virchow argues, "no one can maintain that the human race was ever in a condition analogous to the Microcephali, as it would have perished before history commenced. No such 'small-brained' being is able to procure independently the necessary means of subsistence. . . ."³⁾ In short, Ranke considers the following proposition as an established fact: "*There are at the present day in the entire human species neither races, nor nations, nor tribes, nor families, nor single individuals, which could be designated zoologically as intermediate forms between the ape and man.*"⁴⁾

¹⁾ Ranke, l. c., Vol. II, p. 377.

²⁾ Ranke, l. c., Vol. II, p. 378. Krao was a young girl of Siamese parentage. Her body was covered with hair, and she was said to have a tail like an ape. Some ten years ago she was led through England and Germany, and her appearance in Berlin and London caused a considerable sensation.

³⁾ Ranke, l. c., Vol. II, p. 389.

⁴⁾ Ranke, l. c., Vol. II, p. 392.

CHAPTER VII.

The "Second Main Argument" for the Animal Descent of Man's Body.

THE *second main argument*, adduced by Darwinians in support of the animal descent of man's body, is drawn from paleontology. *The osseous remains* of men and apes, that for untold ages have slumbered away deep down in the bowels of the earth, in the form of petrified masses, are held to prove that man and ape are descended alike from some great-great-grandfather as their common progenitor. "Certainly," as even Haeckel admits, "the negative gaps which we here, as elsewhere, find in paleontological knowledge, are very much to be regretted, and immediately in the primate stem they are (since most of these animals lived upon trees) *greater* than in any other groups of animals."¹) But, in spite of these gaps, so we are told, a close comparison between the skulls, molars, bones of the extremities, etc., hitherto exhumed, precludes all possibility of doubt that the petrifications assume bolder proportions of resemblance the deeper we delve into the primitive history of all living beings, and the nearer we approach the first type from which both man and ape descended. Haeckel, of course, in his capacity of supreme judge of all that pertains to this question, pronounces the "proof of the bones" strong enough to settle the question forever.

¹) l. c., p. 469.

Let us *enter the charnel-house of modern paleontology*, bravely repressing all the uncanny sensations of loathing that may perforce creep upon us. At the entrance we straightway espy the warden of skulls, Ernest Haeckel. In a transport of delight he rivets his eyes on the famous skull of the ape-man, *Pithecanthropus erectus*, which Haeckel's friend, Eugene Dubois, some years ago lugged over from Java. Casting an occasional glance of loving complacency at the *Neanderthal skull*, the curator of the bone-house goes into raptures at the sight of the treasure before him, and in the deep seclusion of his heart evidently admires the low forehead of his granduncle, who, it is said, reached the venerable age of two hundred and fifty thousand years!

The skull, femur and molars of Pithecanthropus erectus, and the *Neanderthal skull-cap*, are, indeed, according to Haeckel's own testimony, the *best* monuments to guarantee the animal descent of man's body. But no one, of course, is better qualified to discover the best monuments than Haeckel himself.

Let us ask, therefore, what is the evidence actually furnished by these stray and scanty remnants? — (Plate 2.)

I. To judge from appearances, it is true, the *Java skull* seems to have belonged neither to a man nor to an ape. This opinion is supported by the fact, observed by Dubois (!), that the skull-cap in question is somewhat smaller than the medium between the normal human and simian skull. But, be it well remembered, this is the *only* circumstance which might possibly wear the semblance of a proof. And this circumstance is such that Dubois himself declares: "A skull that in comparison with that of the normal

man is so small and so ape-like in its form, that it is declared by not a few anatomists to be the skull of an ape, cannot be human.”¹⁾ At all events, opinions *widely differ* on the character of the skull. Scientists of the highest repute, with Virchow in the lead, energetically assert that, in all probability, *the skull belonged to a real ape*. In no case, however, and on this all are agreed (men like Haeckel and Dubois alone excepted), is the skull a connecting link between man and ape, but at best one solitary member in the long succession of the apes’ lineal descendants. *The femur*, it appears, *is that of a man*, but this proves little or nothing at all, because it was found by Dubois *not less than fifty feet away* from the skull. Consequently, it is by no means evident that skull and femur formed part of one and the same original skeleton. Finally, what concerns the famous molar, to which a second was discovered after some time, Virchow seriously questions the affinity of the two teeth, adding that in all likelihood *neither of the two* belongs to that skull. Accordingly the third International Congress of Zoologists, at Leyden, 1895, declined to accept Dubois’ Pithecanthropus as “the long-sought missing link in the chain of the highest primates”. A certain anatomist who had been engaged in the study of the Java bone collection almost as actively as Dubois himself, and, needless to mention, little inclined to look at matters scientific from a Catholic point of view, in reply to my question declared that, as a matter of fact, the osseous remains were of no demonstrative

¹⁾ Eugene Dubois, “Pithecanthropus erectus—A Form from the Ancestral Stock of Mankind.” Annual Report of the Smithsonian Institution, Washington, 1899, p. 454.

value whatever, and the whole story of the *man-ape* nothing else than a *farfical imposition, pure and simple*. In the light of all that has been said hitherto, the truth of Wasmann's statement to the same effect is sufficiently attested. He says: "It is a *criminal sporting with the truth*, out of remains so incomplete and admitting so many explanations to construct an 'evident proof' for the animal descent of man, and all this with the purpose of deceiving a wider public." ¹⁾

2. We next turn to take a look at the far-famed *Neanderthal skull-cap*, giving it for some moments our undivided attention, which, in truth, it fully deserves. For, besides having occasioned a whole library of volumes and of treatises, this skull-cap has had the good fortune of finding its way into museums, in the shape of plaster-cast *fac-similes*, destined to impress deeply on the mind of the wondering visitor the lesson of his lowly origin. A cast of this description is preserved in the grand museum of the "Public Library of Milwaukee". The inscription added to the skull by way of explanation is significant: "Chellean period (paleolithic) 250,000 years. 'Under whatever aspect we view this cranium, whether we regard its superciliary ridges, its sloping occiput we meet with ape-like characters, stamping it as the most pithecoïd of human crania yet (1863) discovered.'—Huxley." ²⁾

To produce a still more effective impression on the mind of the admiring looker-on, an artist has in ad-

¹⁾ 1. c., p. 297.

²⁾ Huxley says besides: "In no sense can the Neanderthal bones be regarded as the remains of a human being intermediate between men and apes." ("Evidence as to Man's Place in Nature." Humb. ed., p. 253) This, of course, is left out!

dition appended a face, which the real skull, as it was found, did not at all possess.

What are we to think of the Neanderthal skull? What is the truth of the case?

Attend and be astounded!

According to Schwalbe³⁾ the following table exhibits the main opinions that have been defended concerning the skull:

I. The Neanderthal skull is not a typical one, but a modified individual skull: (1) It has been artificially deformed by early obliteration of the cranial sutures: Bernard Davis, 1867. (2) It belongs to an idiot: Blake, 1864; Charles Vogt, 1863 and 1867 (partly); Pruner-Bey, 1863 (partly); Hoelder (1892); Charles Zittel (1893). (3) It shows such a number of pathological deviations, that the skull cannot be regarded as the type of a race: R. Virchow, 1872, and J. Ranke up to this day.

II. The Neanderthal skull belongs to a race of men still living.

(1) It is a very recent skull, one that belongs to a Mongolian Cossack of the year 1814: Meyer, 1864 and 1865.

(2) It belongs to an historic people, viz.:

(a) to an old Celt or German: Pruner-Bey, 1863;

(b) to an ancient native of Holland (*Batavus genuinus*): R. Wagner, 1864;

(c) to an inhabitant of old Friesland: R. Virchow, 1876.

(3) It belongs to a primitive race, which is con-

³⁾ Cf. "Stimmen aus Maria-Laach", Vol. LXI (1901), p. 107-108.

nected through intermediate forms with the lowest race of men in existence:

It has a great similarity with the negroes from Australia: Huxley, 1863 and 1865; Lyell, 1863; Vogt, 1863 and 1867; de Quarterfages and Hamy, 1882.

- (4) (a) It belongs to a primitive wild race, in many points different from the present man: Schaaffhausen, 1865-1888. This is the Neanderthal race: Fraipont and De Lohest, 1887, and Fraipont, 1895-1896.
- (b) This race differs from the present man more than the negroes from the white: De Mortillet, 1883.

III. The Neanderthal skull belongs to a form that differs specifically or perhaps generically from the present man: King, 1864; Cope, 1893; Schwalbe, 1901.

We have, therefore, no less than *three main opinions*. The first branches off into *three distinct side-views*, professed by about nine investigators. The *second main opinion* held on the subject graciously allows of *four secondary interpretations*. According to these four subdivisions, which in turn *are again subdivided*, the skull belongs (1) to a Cossack of 1814, (2) to an old Celt or German, (3) to a prehistoric Hollander, (4) to an inhabitant of Friesland, (5) to a kind of negro, (6) to the Kanstatt race, (7) to a prehistoric savage, (8) to the Neanderthal race, (9) to a prehistoric negro. The *third main view* has no subdivisions, but has the privilege of rounding off the list to *a neat dozen of opinions*.

From this list of conflicting statements it appears

at first sight that *almost any and every story can be read into the Neanderthal skull, the final judgment evidently depending on personal prejudice.* We may add that the famous skull could hardly have defeated the fondly-cherished purposes of its admirers with more signal success. For, what concerns the long-expected and conclusive demonstration the Neanderthal skull was destined to supply, all we have to say is that a proof which may serve to *prop up all possible contradictory opinions, is no proof at all.* It is, indeed, a blessing of no mean account that the fate of the poor skull at the end of the world will not rest on the verdict of those sages. Otherwise we might expect to see the many claimants coming to blows for the possession of that skull of theirs, just as in the days of old, when famous Jason sowed the dragon's teeth and hurled Medea's stone into the midst of the giants that arose from the monster's teeth. . . .

But the most interesting feature of the whole story is that *nothing at all is known for certain about the exact spot where the famous skull originally lay.* No one has ever seen the actual geological conditions of the original place of the skeleton. For the bones were, in fact, not seen in a cave of the Neanderthal, but in a ravine on the slope of the hill. Through the ravine water had flown down and had washed away some material, among which there were also the famous bones. Hence, as a number of cautious scientists stated from the very beginning, it is altogether unclear whether the bones were washed down by the water (and then they would probably be of a very recent date), or whether the bones have been originally at the place where they were found. Thus, no one knows where

the single pieces have been before, and consequently *it is impossible to make any positive statement concerning them*. "The whole significance of the skull lies in the fact that already from the very beginning 'the halo of fair renown' was made to celebrate its privilege of having been imbedded in diluvial soil, the formation of which dates back to the time of the old mammals."¹) And despite all this, an age of 250,000 years is ascribed to the skull. This is what we call "*ambiguas in vulgus spargere voces*"—in plain English, "rubbing dust into people's eyes".

Moreover, supposing that the skull is actually a paleolithic deposit, we ask: Who has ever proved that the paleolithic period lies 250,000 years back? We maintain that since that period *less* than 25,000 years have elapsed. Who would be able to prove anything to the contrary? Dana says correctly: "All that geology can claim to do is to prove the general proposition, that time is long . . . but it affords no *satisfactory number*." And LeConte remarks very wisely: "The amount of time which has elapsed since man first appeared is still doubtful. Some estimate it at more than a hundred thousand years—some at only ten thousand!" Therefore, even supposing that the skull is a paleolithic fossil, it is a merely *gratuitous assertion to attribute* to it an age of 250,000 years. But is it really true that the Neanderthal skull is a paleolithic fossil? Yes, if bold assertions could be substituted for proofs, this question should undoubtedly be answered in the affirmative. But this cannot be done, not even in order to impress upon the mind of the public much cherished ideas. Where, then, are the proofs that

¹) Ranke, l. c., vol. II, p. 485.

give evidence of the paleolithic character of the fossil in question? Well, everyone will agree that, in order to determine the period to which a fossil like the Neanderthal cranium belongs, we must either find together with it or in its neighborhood some bones of extinct animals, or some implements, whose age is known, or at least we should know the character and age of the layer in which the relic was found.

Now, (1) we know positively that absolutely nothing, neither bones of animals now extinct, nor implements, have been discovered together with the famous skeleton.

(2) As we have said already, no one knows the actual geological conditions of the place where it was originally deposited.

To all that has been said so far we would add that R. Virchow has given us a description of a skull found in East Friesland, agreeing with the Neanderthal skull "as perfectly as possible". And even to-day, he continues, people can be met, especially in the vicinity of Brussels, going about with a Neanderthal skull on their shoulders.

Where, then, we ask, is that succession of skulls and bones which could furnish us trustworthy evidence for the animal descent of man? Where is that chain of lineal descendants which unites the man of to-day with the common ancestors of man and ape? If, according to Haeckel's own judgment, the two alleged skulls are the best monuments spared by the ravages of time, to tell mankind the story of its humble origin, then we ask again, what is the only scientific, the only reasonable answer we can make to the question put above? The answer is: NO SUCH LINE OF ANCESTRY EXISTS. Or

have, perhaps, all those skulls, which might have been capable of furnishing us some proofs, crumbled to decay? *Vain subterfuge!* No less than thirty different kinds of extinct apes are known to us, and of the ancestors of the human kind not a single trace is to be found! These are truly remarkable facts, veritable riddles, the solution of which would call for an exorbitant expenditure of mental activity from the man who abuses the sovereign gift of his reason so far as vainly to attempt forcing the reality into the set scheme of his preconceived ideas. Dana says with truth, "of that line which is supposed to have reached upward to man, not the first link between the lowest level of existing man has yet been found. This is the more extraordinary in view of the fact that from the lowest limit in existing men there are all possible gradations up to the highest, while below that limit there is an abrupt fall to the ape level, in which the cubic capacity of the brain is one-half less. *If the links ever existed, their annihilation without a relic is so extremely improbable that it may be pronounced impossible.* Until some are found, science cannot assert that they ever existed." ¹⁾

Similarly von Zittel: "Much zeal has been shown in searching for the fossil-ancestors (of man), and the fossil-ape has been studied with special attention. At the present day about fifteen genuine, narrow-nosed fossil-apes are known from the tertiary layers of Europe and India, and some broad-nosed kinds from the glacial strata of Brazil and Argentine. But with one exception, the *Doryopithecus*, all of them are inferior to the three great man-like kinds, the

¹⁾ "Manual of Geology", 3. ed., p. 293.

orang, chimpanzee and gorilla; and, as is proved by a jaw-bone lately discovered, *Doryopithecus* stands likewise relatively low among the so-called anthropomorphs. Hence the *postulate of the doctrine of evolution, the so-called proanthropos, the missing link between man and ape, has not been found.*"¹⁾

But it is time to break a lance with the enemy. What paleontology really attests is *that the men of the first age known to us were as perfect as those of to-day.* The skulls were as large or even more perfectly developed than the skulls of historic times.

Ranke gives the following table of the average capacity of historic and prehistoric skulls:

Parisian of the 12th century	1532 cbcm.
Modern Parisian	1558 cbcm.
Prehistoric cave - inhabitants of Cro-	
Magnon.....	1590 cbcm.
Prehistoric skulls from the cave L'homme	
mort.....	1606 cbcm.
Prehistoric northern "Dolmenbauer"	1586 cbcm.
	(Broca.)

Nor can there be any question of ape-like men who possessed features more simian than are characteristic of any race now in existence. "Though the fertile imagination of many a theorist on creation may represent the primitive man of Europe as a half-simian climber, who built his nest on trees and possessed over-long arms and short, yoketoed legs, he appears to us in reality, in his many representatives, as a member of the well-formed, peculiarly beautiful race of Cro-Magnon."²⁾

It is equally false that prehistoric man could not

¹⁾ Ranke, l. c., vol. II, p. 504.

²⁾ Ranke, vol. II, p. 482.

walk perfectly erect. Collignon based his false assertion on the retroversion of the knee-joint, which, as he maintained, was peculiar to prehistoric man. "But Manouvrier destroyed this dream of the animal-like inferiority of primitive man. By very exact measurements of a great many tibiæ, he has shown that the retroversion of those tibiæ of the glacial period is not greater, but most decidedly smaller than in modern skeletons." ¹⁾

Finally, we may add that prehistoric man, the man of the glacial period, was endowed with a spiritual intellect in no way essentially inferior to ours. This fact is shown by the human relics and implements still extant. Near the abbey of Schussenried (not far from the Lake of Constance), for instance, a stratum of evidently glacial character²⁾ was uncovered in 1866, "in which carved antlers of reindeer, bodkins with eyes, a smooth-scraped needle, fish-hooks, flints in the shape of lancets and saw-blades, lumps of red material for skin-painting, ashes, and remains of char-

¹⁾ Ranke, l. c., vol. II, p. 483.

²⁾ Ranke, l. c., vol. II, p. 417.—There is no doubt that man existed in the glacial period. "The glacial European", says Ranke, "remains an undeniable fact of science" (l. c., vol. II, p. 502). But "no one has hitherto been able to trace man beyond the glacial period" (Ranke, l. c., vol. II, p. 480). "In spite of the very great favor with which the existence of tertiary man has been accepted, the asserted traces of relics are not sufficiently guaranteed to establish a scientific proof for the fact of his existence." "There is nothing, according to Virchow, opposed to the view that man existed in the tertiary period, but from the view to the proof there is a long way. So far that proof has not been found" (Ranke, l. c., vol. II, p. 504).

coal were found intermingled.”¹⁾ Similarly “the ancient inhabitants of the Dordogne (cave-men of France) already attempted to portray objects of the outer world, such as fish, reindeer, or men in carvings on horn and the ivory of mammoth’s teeth with a distinctness and animation which compels recognition. Among the horn implements, mostly awls and arrow-heads with or without barbs, our attention is attracted by the occurrence of needles, with which, doubtless, the inhabitants of the caves sowed together the hides of animals.”²⁾

The very names—the Stone Age, the Bronze Age, and the Iron Age, used by the archeologists of Denmark for the classification of the early traces of man, point to the same fact. Indeed, if we pay due regard to the circumstances in which primitive man lived—and do not forget that he it was who had to *commence* the work of civilization—we must grant that there is no reason for assuming his intellectual inferiority. In this sense we understand and accept the statement of Le Conte, when he says: “The earliest-known man, the river-drift man, though in a low state of civilization, was as thoroughly human as any of us.”³⁾

On this account, Branco, in his famous speech on the descent of man, delivered in the fifth International Zoological Congress held at Berlin, 1902, gives the following answer⁴⁾ to an inquiry about the primitive ancestors of the human race: Man makes his appearance in the history of our earth as a true *homo novus*,

¹⁾ Peschel, “The Races of Man”, New York, 1898, p. 39.

²⁾ Peschel, l. c., p. 37.

³⁾ “A Compend of Geology”, p. 300.

⁴⁾ Cf. Wasmann, l. c., p. 303.

and not as a descendant of preceding generations. Most of our present mammals are represented in the tertiary period by a long series of fossil ancestors, but man appears all of a sudden in the glacial period without a single tertiary ancestor known to paleontology. Tertiary relics of man are wanting, and the traces of human activity that were believed to be of tertiary origin are of a very dubious nature. Glacial fossils of man, on the other hand, are frequently met with. But glacial man appears as a perfect homo sapiens. Most of those very ancient men possessed a skull-cap of which any of us could be proud. Neither arms nor teeth of glacial man were more ape-like or longer than ours; *no! glacial man was every inch a true man*. Hence, who was the ancestor of man? Branco answers: "*Paleontology has no answer to that question. She knows of no ancestors to man.*"

And the renowned Quatrefages declares: "... to those who question me upon the problem of our origin, I do not hesitate to answer in the name of science: I DO NOT KNOW."¹) And Virchow: "In vain have its adherents (*i. e.*, of Darwinism) sought for connecting links which should connect man with the monkey: *not a single one has been found*. The so-called pro-anthropos which is supposed to represent this connecting link, has not as yet appeared. No real scientist claims to have seen him; hence the pro-anthropos is not at present an object of discussion for an anthropologist. Some may be able to see him in their dreams, but when awake they will not be able to say that they have met him. Even the hope of a

¹) "The Human Species" (The International Scientific Series, vol. XXVII), p. 128.

future discovery of this pro-anthropos is highly improbable, for we are not living in a dream, or in an ideal world, but in a real one.”¹⁾

We conclude this section with an observation made by Balmes in his “History of Philosophy”: “*What is the origin of the world?* To solve this riddle, philosophers have disputed without end and invented an endless number of systems; and yet, despite their endeavors, full many centuries before Plato and Pythagoras were ushered into life, those grand and simple words have been transmitted from age to age: ‘In the beginning God created heaven and earth’; . . . and further on an account of the world’s creation follows, quite to the amazement of modern geologists, bewildered at finding such wisdom in a time-worn book, written by an inhabitant of the desert, in a lonely corner of the globe. *What is the origin of man?* Put this question to philosophy, and she will answer you with an air of gallantry; but in that self-same book it is written: ‘*The Lord God formed man of the slime of the earth; and breathed into his face the breath of life, and man became a living soul.*’”²⁾

¹⁾ “Anthropology in the Last Twenty Years”, Report of the Smithsonian Institution, Washington, 1890, p. 563.

²⁾ “Geschichte der Philosophie”, p. 179.

PART IV.

THE THEORY OF EVOLUTION AND OUR ATTITUDE TOWARDS IT.

CHAPTER VIII.

Evolution and Faith.

DARWIN'S THEORY of the origin of species cannot be defended. For natural selection, which, according to him, is the primary agent in the specific development of plants and animals, is insufficient in itself and in open contradiction to most evident facts of natural history. *Haeckel's generalization of Darwin's theory* of natural selection is a philosophical and social monstrosity, a conception diametrically opposed to the Christian world-view and to the religion of God. Finally, *the theory of man's animal descent*, in view of the ungrounded arguments alleged in its defense, cannot be admitted. Both the body and soul of man were directly created by God, and *not the shadow of an argument* has been traced in support of the animal descent of the human body.

Hence we reject Darwinism in its first three acceptations.

It remains for us to go into the question whether this verdict is to be extended to the theory of evolution, which, as was stated above, is sometimes *inappropriately* styled "Darwinism".

What do we mean by the theory of evolution? *The theory of evolution* is opposed to the *theory of constancy*. The latter maintains that the species of animals and plants now in existence are essentially unchangeable and have always been so from the very beginning. They were originally created by God in their *present* state of existence. The theory of evolution holds the very opposite to be true, declaring that the species of plants and animals existing at present *were not always as they are to-day*. They have descended from other entirely different species, and these in turn from still more primitive forms, until finally we arrive at a more or less limited number of species which were directly produced by God.

The theory of evolution is evidently not identical with Darwin's theory of natural selection. For the theory of natural selection says MORE than the theory of evolution. It pretends to offer an explanation of how and by what means the species of to-day have developed from those that preceded. It would, consequently, be an abuse of the term to brand the theory of evolution with the repulsive epithet of "Darwinism".

"The use of the word Darwinism in this sense", says Wasmann, ". . . is based on a principle illogically mistaking a particular form of evolution for the general theory itself. Forty years ago, when Darwin's theory of descent was the only one generally known, this error may have been pardonable. To-day it is not. It is only for the sake of defending prejudices that the two terms 'Darwinism and Evolution' are used as synonyms. For the defenders of Darwinism resort to it as a means of popularizing their waning

theory, while the antagonists of evolution, by contemptuously stigmatizing this doctrine as 'Darwinism', leave no means untried of rendering the constancy of systematic species dubious."¹)

We propose to our readers three questions which will enable them to determine the attitude of Catholics towards the theory of evolution:

1. What is the verdict of faith on this theory?
2. Is the theory opposed to reason?
3. Do the natural sciences offer any facts in its favor?

A short answer to these three questions will decide whether and how far we may accept the theory of evolution.

¹) Wasmann, l. c., p. 171.—The following quotation from the *Inter-Ocean* (Chicago) of May 7 (Cable and Financial), No. 44, 1905, is a striking verification of Wasmann's warning:

"Sees Conversion of the Church to Darwinian Theory."—"German Savant says Work of Jesuit Writer indicates Recognition is to come."

"Berlin, May 6. Prof. Ernst Haeckel has delivered a most interesting lecture on the subject of evolution and the Church. He had been induced, he said, to revoke his decision, made some years ago, never to lecture in public again, by the appearance of a book which he claims marks an era in the history of evolution. It is the work of Eric Wasmann, a Jesuit father, residing at Luxemburg, who has made a special study of ants. Wasmann acknowledges his conversion to Darwinism (sic!), except as regards the genesis of man, who, as he says, differs from the entire animal world in that he possesses a soul or the spirit of God (!). In spite of this reservation, Professor Haeckel sees in Wasmann's statements an admission on the part of the Catholic Church (!), that the Darwinian theory is correct, and he regards the present position as a compromise (!) as important as that made by the Church with Copernicus. The consequence will be, adds the

Let us take a look at Holy Scripture; in the first chapter of the Book of Moses we meet the following passage: "And God said: Let the earth bring forth the green herb, and such as may seed, and the fruit-tree yielding fruit *after its kind* which may have seed itself upon the earth. And it was done." Again: "And God created the great whales, and every living and moving creature, which the waters brought forth, *according to their kinds*, and every winged fowl *according to its kind*. . . . And God made the beasts of the earth, *according to their kinds*, and cattle and everything that creepeth on the earth *after its kind*."

Such are the decisive words of Holy Writ. The question is whether or not they condemn evolution. At the very first glance one might be inclined to think that Holy Scripture ascribes the origin of all animate beings, *according to their kind*, to the creative word of God, *as its direct and immediate cause*. In fact, the greater number of the holy Fathers accepted the words in this their most obvious and literal meaning. But, is this perhaps a proof that the explanation offered by those Fathers of the Church is the *only* possible, the *only* correct one? Josue commanded the sun to stand still (Josue x, 12-13). The majority interpreted these words in their literal sense. Still this interpretation is false, since the sun does not revolve about the earth, but the earth about the sun. The matter is evident. For, in some passages *which in themselves admit of several explanations the interpretation of Holy Scripture depends upon the philosophical ideas and scientific knowledge of the time*. But the *interpretation* of a Script-
savant, that Church-teaching will now adapt itself to the Darwinian theory (sic!)."

tural text and the *article of faith* it actually contains are *two different things* which demand a clear distinction. Now, the fact that the Fathers of the Church took the above quoted passage in its literal meaning is not to be wondered at, since the philosophical and scientific views of their times suggested no other explanation. But this acceptance *in no way* affects the doctrine of faith actually contained in those words.

What, then, is the real meaning of the text in question?

Father Knabenbauer, S. J., answers the question in the following manner:¹⁾ "Considered in connection with the entire account of creation the words of Genesis, cited above, proximately maintain nothing else than that the earth with all it contains and bears, together with the plant and animal kingdoms, has not produced itself or is the work of chance, but *owes its existence to the power of God*. However, *in what particular manner* the plant and animal kingdoms received their existence; whether all species were created simultaneously or only a few which were destined to give life to others; whether only one fruitful seed was placed in mother earth, which under the influence of natural causes developed into the first plants, and another infused into the waters to give birth to the first animals . . . all this the *Book of Genesis* leaves to our own investigation and to the revelations of science, if, indeed, science is able at all to give a final and unquestionable decision. In other words: *The article of faith, contained in Genesis, remains firm and intact, even if one explains the manner in which the different species originated according to the principle of the theory of evolu-*

¹⁾ "Stimmen aus Maria Laach", vol. XIII., p. 74.

tion.” In accounting for their origin, Father Knabenbauer evidently does not think it necessary to adhere to the literal sense of the Scriptural text. The famous exegete bases his view upon a number of striking passages found in the writings of the Holy Fathers. Here we can only mention the idea of the world’s creation as conceived by *St. Augustine*, the greatest of ecclesiastical doctors. St. Augustine stood with those who defended a divine and simultaneous creation of all things, not, however, as though all individual beings were perfectly developed and existed as separate individuals, but in the sense that God “created the fundamental material for all things, which, having been fructified by God with latent germs and forces, gave rise in the course of time and in preordained succession to individual beings.” This assertion of St. Augustine, confirmed, as it is, by many other passages in his works, *is a clear and unmistakable proof* that the eminent doctor did not take those words of Holy Scripture in their literal meaning. However, not all the Fathers hold the opinion of St. Augustine. But the fact that, far from condemning his interpretation, they readily admit its reasonableness, not to say possibility, evidently goes to show that such an acceptance *does not contradict the words of Scripture*.

Moreover, even those who *insist upon the literal interpretation* of the Biblical account of creation, admit, at least implicitly, *that the origin of new species is not impossible*. It was a universally prevalent idea that insects and many small animals originated from decayed woods and fruits, from the hides and carcasses of animals and from the muddy material of swamps and pools. Some even, as St. Isidore, gave instruc-

tions as to how certain animals might be produced. "Many," he says, "have observed that bees are generated from the carcasses of oxen. In order to produce them, the flesh of slaughtered calves is pounded, so that maggots are brought forth from the putrefying blood, and they then develop into bees. But properly bees are said to come from oxen, as hornets from horses, drones from mules, and wasps from asses." ¹⁾

Now be this view ever so wrong, *it implies a distinct admission* that the origin of new species *is not contradictory* to the Scriptural accounts. Otherwise the Fathers of the Church would never have held such an opinion.

But should one inquire, *why* Holy Scripture expresses itself in such a manner, the answer is close at hand. Moses, as is well known, addressed those words in the first place to an *uneducated people*, and his only object was to bring home to them in a clear and forcible manner *the fact that God is the Creator of all things*. But he could not have attained this end more effectively than by speaking of the species of plants and animals in a manner *corresponding to the actual experience of the people*, telling them in plain words that all things had their origin in God, the principle of all existence.

A similar explanation is given by the great American Geologist James D. Dana. In speaking of the cosmogony of the Bible, he first of all expresses his conviction that this ancient document must be of a divine origin. For "no human mind was witness of

¹⁾ Migne, vol. LXXXII., p. 470.

the events; and no such mind in the early age of the world, unless gifted with superhuman intelligence, could have contrived such a scheme,—would have placed the creation of the sun, the source of light to the earth, so long after the creation of light, even on the *fourth* day, and what is equally singular, between the creation of plants and that of animals, when so important to both; and none could have reached to the depth of philosophy exhibited in the whole plan.” Then he continues: “*If divine, the account must bear marks of human imperfection, since it was communicated through Man.* Ideas suggested to a human mind by the Deity, would take shape in that mind according to its range of knowledge, modes of thought, and use of language, unless it were at the same time supernaturally gifted with the profound knowledge and wisdom adequate to their conception; and even then they could not be intelligibly expressed, for want of words to represent them. The central thought of each step in the Scripture cosmogony . . . is brought out in the simple and natural style of a sublime intellect, wise for its times, but unversed in the depths of science which the future was to reveal. The idea of vegetation to such a one would be vegetation, as he knew it; and so it is described. The idea of dividing the earth from the fluid around it would take the form of a dividing from the fluid above, in imperfect conceptions of a mind unacquainted with the earth’s sphericity and the true nature of the firmament,—especially as the event was beyond the reach of all ordinary thought.”

Finally, having explained the remarkable harmony between the opening page of the Bible and the results

of geology, he concludes with these beautiful words: "The record in the Bible is, therefore, profoundly philosophical in the scheme of creation which it presents. It is both true and divine. It is a declaration of authorship, both of Creation and the Bible, on the first page of the sacred volume. *There can be no real conflict between the two Books of the Great Author. Both are revelations made by Him to Man,—the earlier telling of God-made harmonies, coming up from the deep past, and rising to their height when Man appeared, the later teaching Man's relations to his Maker, and speaking of loftier harmonies in the eternal future.*"¹⁾

What, then, is the attitude of faith towards the theory of evolution? *The answer is a twofold one:*

In the first place, faith requires that, in any case, the first dawn of plant and animal life—for this alone is here taken into consideration—be ascribed, in some way at least, to the creative power of God. All plants and animals ultimately derive their origin from God, and without God they could not exist.

In the second place, faith has not decided whether plants and animals have been directly or indirectly created by God. In other words, it is a matter of perfect indifference, as far as faith is concerned, to maintain that the species of plants and animals, now existing, were originally created by God in their present state, or to hold an original creation of a few species which possessed the power of developing into others.

There is no need whatever to shrink in dismay from the theory of evolution. For, *disregarding the origin of man, and granting the origin of plants and animals to be due to God as to their ultimate cause, the*

¹⁾ 1. c., pp. 847—850.

theory of evolution is nothing more than a question of philosophy and of natural science, a question in itself entirely harmless and free from all dogmatic considerations. Cling to the clear distinction between the four different significations of "Darwinism and Evolution", adding to the last the two restrictions just mentioned, and rest assured that your assertion will in no way contravene the doctrines of revealed truth.

Is the theory of evolution, therefore, to be accepted in the sense just explained? *This does not follow.* For, even if faith does not reject the theory of evolution, it is not necessarily implied that the theory may be reasonably adopted on the ground of natural science. Consequently, to acquire a correct estimate of the theory of evolution, we must necessarily submit the question to the tribunal of reason and of the natural sciences.

CHAPTER IX.

Evolution and Reason.

FAITH and Holy Scripture are not opposed to the theory of evolution. They merely insist on the *fact* "that the world and all things which are contained in it, both spiritual and material, have been, in their whole substance, produced by God out of nothing" (Canons of the Vatican Council). About the *manner* in which all this was accomplished, faith is silent.

Hence we turn to the tribunal of reason and ask: *What is the verdict of philosophy on the theory of evolution?* Does this theory contradict the fundamental tenets of Christian philosophy, or are both in concert with each other?

The theory of evolution is intended to account for the *origin* of the different species of plants and animals. According to this, the theory implies that objects which once were devoid of existence came into being in the course of time. Hence, there must be a sufficient cause which fully accounts for this effect. For it is a fundamental principle of sound philosophy that there can be no effect without an adequate cause. What may this cause be in our case?

Philosophy answers in unmistakable terms *that the origin of the first living cells is undoubtedly due to a personal God who has infused life into inorganic matter.* For brute matter is unable to develop into living matter by its own forces. Brute matter is the lowest

form of being and in all its properties directly opposed to living matter. For brute matter as such does not act, unless it be acted upon, and the effect produced is mathematically equal to the amount of force imparted to it from without. If left to itself, it spontaneously tends to enter into the most stable combinations, and these again do not rest until they have assumed the most stable state possible. Here are two illustrations. If the element chlorine acts successively upon the six metals potassium, magnesium, aluminium, iron, silver, gold, six different chlorids or salts are formed. Now the action is most violent in case of potassium; but its intensity decreases as we proceed through the scale from potassium to magnesium and so forth, becoming least in case of gold. The amount of heat set free in the single experiments is in the same decreasing proportion, being greatest when chlorine combines with potassium, and least when it combines with gold. But the relative stability of the compounds formed is in perfect harmony with these facts. For each of the six metals can separate each of the subsequent metals from their combination, but none of the row is able to take the place of the preceding metal. Silver can separate gold from a chlorine-compound, iron both silver and gold from their combinations and so forth; but it never occurs that gold would replace silver or any other metal in the various salts.

Again the element sulfur occurs in three different forms, as rhombic crystals, as monoclinic crystals and in the uncrystallized condition, the first of these being the most stable. Accordingly, if uncrystallized sulfur is left to itself, it spontaneously forms crystals

under certain conditions, first of the monoclinic kind, but at the end invariably of the rhombic system, a change which is accompanied by a considerable evolution of heat.

Hundreds such like illustrations are furnished by chemistry and physics, and a thousand may be added from phenomena of daily experience, all evincing the self-same conclusion that the tendency towards stability and equilibrium is the fundamental characteristic of inorganic matter. Indeed, there is no clock-work powerful enough to wind itself up by dint of its own activity, no steam-engine which would supply itself with coal and steam. If no motion be imparted to them *from without*, clock-work and steam-engine are incapable of acquiring energy and of doing any work, be it ever so little. *The organism*, on the contrary, *is able to act of and on itself, to develop and perfect itself by its own motion and activity*. Its tendency is not stability, but motion. Unceasingly the sap rises in the stems and branches of trees, and without rest the blood hurries through the arteries and veins of animals. Without rest the cells divide and multiply, constantly expending energy and making up again for the losses. A twig is broken from a tree, a limb torn from the body of an insect, a wound inflicted on one's hand or leg; at once a thousand cells rush to the injured spot; a new twig grows out from the tree; the limb is healed or even restored; new tissue fills out the wounded hand or leg.

No stone or crystal is capable of taking up foreign elements into itself and of assimilating them to its own substance. No stone or crystal has the power of developing from within. No stone or crystal can

propagate or reproduce its kind. *Organized or living matter alone* is capable of performing all these functions. Plants and animals alone *can nourish themselves and develop* by taking food which they change into their own substance and which they dispose of according to their specific and individual form of structure and according to the needs of every single part of the organism. *They alone can give rise to new individual forms*, perfectly like to themselves, and multiply their kind indefinitely.

In a further description of this essential difference between crystal and organism, G. H. Williams says as follows:

“Crystals are distinguished from living organisms by the method of their growth. While the latter grow from within outward and are conditioned both in their form, size and period of existence by the internal laws of their being, crystals enlarge by regular accretions from without, and are limited in size and duration only by external circumstances. Organisms must pass through a fixed cycle of constantly succeeding changes. Youth, maturity, and old age are unlike and must come to all in the same order. There is, furthermore, in nearly all living things a differentiation of organs, limitation in the extent of growth and the power of reproduction. In crystals, on the other hand, every part is exactly like every other part. Our definition of crystal structure is an arrangement of particles, the same about one point as about every other point; hence, in one sense, the smallest fragment of a crystal is complete in itself. Moreover, since crystals grow by the addition of regular layers of molecules, arranged just like all other layers, we can set no limit to the

size of a crystal, so long as the supply of material and conditions favorable to its formation remain constant. There is, in fact, the widest divergence in the size of crystal individuals of the same composition and structure. Those of ultra-microscopic dimensions and those many feet in length may be identical in everything but size. Both are equally complete, and one is in no sense the embryo of the other. Finally, the individual crystal, unlike the individual organism, will remain unchanged so long as its surroundings are favorable to its existence.”¹⁾

In short, crystal and cell, the two most typical representatives of brute and living matter, differ from each other in three main points. (a) In the crystal we observe the greatest possible homogeneity of structure and physical properties, in the cell the greatest possible differentiation of structure and physiological functions. (b) The crystal reveals the greatest possible stability in every respect, the cell an innate tendency of perfecting itself from within. (c) In the crystal increase in size and number is effected by an unlimited external accretion, in the cell growth and propagation of kind are due to the most complicated processes of *immanent* cell-division according to a definite plan of great perfection and with a definite result.

Hence there can be no doubt that inorganic matter is *inferior* to organic matter, and that the latter has properties which are *directly opposed* to those of the former. Consequently, *inorganic matter as such could never give birth to organic matter.* But, besides inor-

¹⁾ “Elements of Crystallography”, New York, 1892, 3rd ed., pp. 10—11.

ganic matter, there was *nothing* in the beginning of time which had the power of doing so *except God*, the Creator of all things, to whom matter itself with all its laws and forces owes its existence. *It is, therefore, a true postulate of reason to assume that the first origin of life is due to the action of a personal Creator.*

But what will philosophy tell us concerning the living beings which in the course of ages succeeded those that were originally produced by God? There is a *twofold* possibility. *Either* all species of plants and animals existed from the very beginning, *or* came into existence in the course of time. Now, if they existed from the very beginning, then they were evidently identical with those first living beings of which we have just spoken. Hence, their origin is due to God. If they originated at *later* periods, we must be able to assign a sufficient cause for their coming into existence. *Is there such a cause?* The answer is *two-fold*. These species of a later date were *either* directly produced by God as their predecessors were, *or* they were the descendants of those first species, which originally received from God the innate power and tendency of giving rise to new specific forms.

Both explanations are perfectly in accord with the demands of reason. For both offer a sufficient cause to account for the origin of species. Which of the two is the true one cannot be decided by reason alone. *What reason demands is, that the origin of all organic as well as inorganic nature is ultimately due to God.* For there is no effect, which is not produced by a cause superior, or at least *equivalent* to it. Absolute "nothing", being less than "something", cannot by itself develop into matter. Mere matter cannot evolve itself into

life; for it is *less* than life. Species of plants and animals, produced by God, cannot of themselves give birth to new and more perfect ones; for *without* an intrinsic law of development, *without* an intrinsic formative power to transform themselves into beings with new and more perfect organs and qualities, these first species of plants and animals are *less* than the new and more perfect species which should spring from them as from their cause.

Again the *intrinsic forces and laws of development* cannot possibly be the product of blind and impotent chance, but must likewise be ultimately due to God's wisdom and power. A proof of this. Unearth and decipher the countless petrifications which lie scattered throughout the boundless tracts of nature's realm; let your intellect, unclouded by the haze of prejudice, study the richness and variety of a kingdom of plants and animals now extinct, but inurned and embalmed by the preserving hand of nature in vast layers of rock and in many a curious cavern; survey the endless range of living creatures participating, each in its own particular way, the singular beauty and harmony pervading the entire world of living beings that people this wonderful earth—and you cannot help but recognize in all the organs, cells and tissues of the single organisms, endowed, as they are, with a wonderfully adapted and almost infallible activity, masterpieces of inconceivable grandeur and harmony. At the sight of such wonders, who can fail to acknowledge that the almost infinite energy of the intrinsic forces and laws, which moulded the present world of living beings, cannot be the work of chance, but must have had its ultimate source in the wisdom and power of

God. He it is who has implanted them in the first living germs which came from His hand.

What, therefore, does reason maintain about the origin of species? It maintains that this origin must be ascribed to God either directly or indirectly. Reason does not decide whether all the species now existing have always remained in the same condition of their original creation, as they were when first produced by God, or whether they descended from other species more or less different from themselves. *Nor* does she explain how many species were originally produced by God, and in what manner others were derived from them. She also *refuses* to furnish any positive information on the question whether, after the first species were produced, God repeatedly called new forms of plants and animals into existence, as the long geological periods succeeded each other. *All this is a matter of perfect indifference to her.* She does not even decide which particular laws regulated the development of species, if such has taken place, and which intrinsic powers have brought new forms. Place, time and other circumstances connected with the first origin of life, the succession of the single species as to kind and number, all this reason *cannot* determine. Most of these questions can be solved only by having recourse to the natural sciences. At any rate, *they have nothing to do with Philosophy.* It is the task of the philosopher to search, as far as possible, into the *ultimate* causes of things and phenomena, and to watch with greatest care that the *laws of logic* remain forever intact.

What, therefore, is the attitude of reason towards the theory of evolution?

The answer comprises *three propositions*:

1. Reason demands that the theory of evolution supposes the interference of God in the first origin of life.

2. Reason, furthermore, demands that the development of new species is to be reduced to *intrinsic powers* and to *intrinsic laws* of development. These powers and laws, in their turn, have been put into nature by the Author of life.

3. Man—as has been proved above—is outside the domain of evolution. For man is a living being, gifted with intelligence and will, faculties of a purely spiritual nature and in no way to be compared with the material¹⁾ soul of the animal and the living principle of the plant. No theory of evolution can span the chasm between matter and spirit. For the characteristic properties of each are in every respect *diametrically opposed* to each other. It would, therefore, be an *intrinsic contradiction* and an *absolute impossibility* to derive the spiritual nature of man from the *sensuous* nature of the brute.

This is what sound and unbiased reason has to tell us concerning the theory of evolution. Provided the theory remain within the limits defined by the three restrictions made above, it is in full harmony with the principles of reason and can meet the stern face of philosophy with a clear and calm conscience. If, however, that theory should ever presume in the dead and dark of night to pass over the bounds and to extend its domain, it exposes itself to the ridicule of contradiction and will finally be forced to restore to its legitimate owner the territory unjustly occupied.

Philosophy, then, is not opposed to the theory of evolution. On the contrary, it is strongly inclined to

¹⁾ *i. e.*, intrinsically dependent on matter.

favor it. For it is a well-founded and universally accepted principle of Christian philosophy, that no direct interference of God is to be assumed, *if merely natural causes sufficiently account for phenomena.* For, she is convinced that it is *more in accordance with the ways of Divine Wisdom to make use of created causes,* whenever they are sufficient to produce the desired result. It was for this reason that she welcomed the Copernican system with all the main consequences it involved, and cheerfully accepted the various proofs suggested by the natural sciences in favor of the idea that sun and earth and all the stars and planets were developed from a huge ball of glowing gases. She will be equally inclined to give preference to the theory of evolution, provided, of course, the natural sciences will supply the necessary facts.

Does it follow from this favorable verdict of philosophy that the theory of evolution ought to be accepted? We answer again that this conclusion is unwarranted. For, so far we have only shown that faith is not inimical to the theory of evolution and that reason favors it. But from a mere possibility and probability, we are by no means allowed to infer a reality. The natural sciences must decide the question. They and they alone are qualified to judge whether the theory of evolution is based on real facts, or is nothing else than a probable idea; in other words, whether it is to be accepted or rejected.

CHAPTER X.

Evolution and the Natural Sciences.

THE theory of evolution has nothing to fear from faith. Nor does it come into collision with the principles of philosophy. The final solution of the question will, therefore, rest *solely* with the natural sciences. If there are facts which evidently support the theory of evolution, we shall not hesitate to adopt that theory. Otherwise we shall adhere to the time-honored theory of constancy, being in the meantime satisfied to admire the beauty and grandeur of an idea, the realization of which is but a mere possibility.

What, therefore, is the verdict of the natural sciences upon the theory of evolution? In other words, are there any *facts* at hand which cannot well be made to agree with the theory of constancy, and are apt to find a readier explanation if viewed in the light of an evolutionary principle?

I.

Before we enter upon this question, we call attention to the fact that, far from opposing dogma and reason, *the natural sciences even emphasize the restrictions which determine the domain of the supposed theory of evolution.*

With reference to *the origin of man* this is evident at a glance. For we have amply proved that the

natural sciences have not been able to advance even the slightest shadow of an argument in support of man's animal descent.

But what do the natural sciences maintain concerning *the origin of life*? We begin with a proposition, conceded by most scientists, that *life must have had a beginning*. This follows from the fact, as Prof. August Weismann argues, that *all organic substances are constantly and spontaneously changed into inorganic substances*. But "a being which comes to an end, cannot be eternal; it must have had a beginning; consequently organic combinations are not eternal, but transitory, something which comes and goes, originating when all necessary conditions are fulfilled, but to be decomposed into simple combinations, as soon as those conditions are undone."¹⁾

The *temperature of the earth*, moreover, even at the time when a solid crust had been formed, was at least 2500 degrees F., which evidently must have rendered the existence of living germs impossible.

Liebig's theory, finally, which suggests that *life has been brought to our globe from other cosmic bodies by meteorites* is untenable.

For the supposed living germs buried in the crevices of meteorites could never have sustained the *extreme cold and absolute aridity* of the cosmic spaces. Nor is it in any way probable that a single living germ could have been kept alive in a *meteorite* turned into a *glowing body* when passing through our atmosphere. Besides, it is plain that all such theorizing *merely retards* the solution of the problem. For, if

¹⁾ "Vorträge über Descendenztheorie," vol. II, ed. 2, 1904, p. 306.

living germs have come to this earth from other cosmic globes, the same question of their origin confronts us. *At any rate, so the great majority of prominent scientists assures us, life must have had a beginning.*

On the other hand, it has been *clearly demonstrated that living beings cannot originate from inorganic matter, but solely from other living beings.* Professor Rosenthal says to this effect: "In order to exclude with certainty any development of living beings in infusions or fluids, that contain the substances necessary for their nutriment, *two conditions must be fulfilled: receptacles and materials must be entirely free from living beings and their germs, and the subsequent entrance of the same must be made impossible.* But it is not easy to fulfill these two conditions. This is the reason why we not infrequently meet men who maintain that their experiments have proved primo-genesis beyond the possibility of doubt. But the very contrary must be asserted with so much the more emphasis: *in all experiments that have been made with scrupulous care, living beings have never come into existence under the above-mentioned conditions.*" Again, "However we may vary the conditions of the test, it can always be shown that no new substances develop if no living substances be present. *Therefore we can maintain with certainty that no one has been able to prove primo-genesis, the origin of a living substance from one that had no life.*" ¹⁾

Hence, *since the laws of nature are supposed to have been the same from the very beginning, it follows with logical necessity that the first origin of life is not due to spontaneous generation.*

¹⁾ "Lehrbuch der Allgemeinen Physiologie," 1901, pp. 554-556.

This conclusion, it is true, the greater number of modern scientists reject. "All that we may legitimately affirm," says Rosenthal, "is that under the conditions which have been thus far realized in experiments, this origin of life does not occur." "Living beings originated perhaps in quite another way and from quite another material than that which we use in our experiments. Hundreds and thousands of years were *perhaps* necessary for such an origin. *Perhaps* . . . "It would be superfluous," Rosenthal concludes, "to continue this enumeration of 'perhapses.' We must leave unanswered those questions which we cannot solve with the resources at our disposal. We must be ready to acknowledge that we know nothing about the first origin of living beings on earth, and we must wait to see whether the discovery of new facts in the future will fill up this gap in our knowledge." ¹⁾

In a similar spirit of agnostic resignation, Weismann and others try to get around the dreadful conclusion of admitting the existence of a personal God. Weismann even calls primo-genesis a *demand of science* and — to make matters doubly sure — he maintains *that it will be impossible to show, that life does not originate from inorganic matter!* For the *first living beings* originating will be and will have been *so small and insignificant* that no microscope would be powerful enough to discern them. Indeed, those "*biophorids*," as he calls them, will be so minute as to be and forever remain *entirely imperceptible*. But such are idle dreams and no facts; fanciful ideas resulting from the *a priori* assumption that rather than acknowledge a personal Creator, we must admit the most groundless assertions, made to rest on imperceptible facts!

¹⁾ 1. c. p. 557.

The matter is very simple. We have three facts, universally admitted by modern scientists:

1. *The laws of nature remain unchangeable.* Hence the laws of the present have been the laws of the past. The contrary assumption would make all scientific inquiries into the past altogether impossible.

2. *No intermediate beings between inorganic matter and the simplest living cell, composed of protoplasm and nucleus, have ever been discovered.* Weismann's "biophorids," Hertwig's "idioblasts," Altmann's "autoblasts," etc., are to this day no more than *pure possibilities*. Similarly *Haeckel's moners*, which he described as living beings without the vestige of a nucleus, are fast disappearing with the constant improvement of modern instruments. According to Hertwig, "the number of moners was formerly very considerable, but *decreased with the growing perfection of technical means to prove the presence of nuclei*. Hence, it is not merely a conjecture, but a probable assumption that the nuclei have only been *overlooked* in the few forms that are still supposed to be monera." ¹⁾ Moreover, the lower plants that were thought to be

¹⁾ "Lehrbuch der Zoologie," 1900, p. 159. It is remarkable that many books on zoology still describe the monera as beings consisting of protoplasm. For such forms are well adapted to make the difference between dead matter and the lowest organisms less conspicuous. Thus we read in Packard's Zoology: "It is probable that the monera were the earliest beings to appear, and that from forms resembling them, all other organisms have originated. We can conceive at least of no simpler ancestral form; and if organized beings were originally produced from the chemical elements which form protoplasm, one would be naturally led to suppose that the earliest form was like 'protamoeba' (one of the moners)." (Advanced Course, 1897, p. 21-22).

destitute of a nucleus as the *bacteria or microbes*, have been found to possess protoplasm and nucleus, though the latter is dissociated into a number of tiny granules. Even the *red corpuscles in the blood* form no exception to the rule. They contain a nucleus, at least in the beginning of their existence, and die soon after losing it. In short, *there is no living cell* either among the lowest plants or animals or within the tissues of higher plants and animals, *that is not composed of protoplasm and nucleus*, a fact which proves to evidence that *all the various intermediate forms invented by many modern scientists are fictions*. Nor can this be otherwise, since, as we have shown above, there is an essential difference between organic and inorganic matter.

3. As has been stated, *no spontaneous transition of inorganic matter into living matter has been observed*.

What conclusion are we to draw from these three facts?

That *spontaneous generation has actually never taken place and consequently that the first origin of life is due to a cause not identical with inorganic matter*. Or as the famous biologist Reinke has it: "If we assume that living beings are at all and in any way derived from inorganic matter, the theory of creation is in my opinion *the only one* that complies with the demands of logic and causality, and, consequently, with a rational investigation of nature. I take creation to mean that at the beginning of time, when no living being of any sort moved on the surface of the earth, the first organisms came from the pre-existing conditions of the earth's crust through forces that were *not contained within inorganic matter*, but worked on it *from without*, just as iron and brass are turned into

machinery by forces that are not a property of these metals." ¹⁾

It is clear from this *that the natural sciences have by no means succeeded in removing those restrictions which faith and reason demand as necessary qualifications of any evolutionary theory.*

II.

Quite different, however, is the verdict of the natural sciences on the theory of evolution, *provided* the latter remains within the irremovable limits just defined. Let us shortly review the *most important points* on which the entire question hinges:

1. Generally speaking, the plants and animals now existing bear characteristic features of a *constant* nature, and if changes occur, they generally remain within the limits of the species. Our domestic animals differ in no small degree from their wild progenitors. They do not, however, constitute new species, but varieties. For if left to themselves they will invariably lose the improved ways and traits acquired by years of training and domestication. And what will be the ultimate outcome? That the animals we tried to elevate above their less fortunate fellows of the forest and the prairie, will within a very short time adopt the life habits and structural peculiarities of their wild companions. But, be it well remembered, *the undeniable specific constancy of which we speak, proves nothing beyond the fact that at the present period of the earth's development the species of plants and animals are generally constant. That they have always been so, has not been determined. On the contrary, a series of facts is at hand which encourage the assumption that the*

¹⁾ "Einleitung in die Theoretische Biologie," p. 559.

various species of today have come to their present state of existence and perfection by a *process of specific evolution*. Scientists of the best repute as Kerner, von Marilaun, Ed. Fischer, and especially *Hugo de Vries* and *Eric Wasmann* have of late established the proof that, by way of rare exceptions, there exist even today a few species of plants and animals which produce new specific forms. The facts, it is true, are mostly of so technical a nature that to insert here an exhaustive explanation and to point out their full argumentative value, would be foreign to the nature and purpose of our present dissertation. For their due appreciation the knowledge and interest of the specialist or at least a thorough acquaintance with those respective branches of natural history, from which the arguments are drawn, forms an indispensable requisite. It may nevertheless be of some interest to indicate in brief the arguments of *Hugo de Vries* and *E. Wasmann*.¹⁾

In the year 1866 de Vries observed a plant called *Oenothera Lamarckiana* (Evening Primrose), of American origin and possessing great powers of fertility. At once he conceived the idea that precisely this fertility might possibly inaugurate a period of mutation, if the plant were put into foreign soil. Two deviating forms were discovered on the same field with the *Oenothera Lamarckiana*. They manifested the constancy of true species, but were unknown to the systematists of the day. This discovery rendered de Vries' supposition highly plausible. Encouraged and confirmed in his belief, de Vries took nine well devel-

¹⁾ The following is taken from our paper in the *Messenger* (New York) April, 1905, on "The Arguments of De Vries and Wasmann in Favor of Evolution," with the kind permission of the Rev. Editor.

oped specimens of the *Oenothera Lamarckiana* and transplanted them from Hilversum, a town situated between Amsterdam and Utrecht, to his garden in Amsterdam. And what was the result? Within seven generations he produced from these nine single specimens about 50,000 *plants* and among their number about 800 *specimens* that had *unmistakably deviated* from the original type. This interesting and marvelous result is more clearly expressed in the figures of the following table : ¹⁾

GENETIC TREE OF *OENOTHERA LAMARCKIANA*.

(The numbers designate individuals.)

(Plate 3-4.)

Generation.	Gigas	Albida	Oblonga	Rubrinervis	Lamarckiana	Nanella	Lata	Scintillans
1. 1886-87..	—	—	—	—	9	—	—	—
2. 1888-89..	—	—	—	—	15,000	5	5	—
3. 1890-91..	—	—	—	1	10,000	3	3	—
4. 1895.....	1	15	176	8	14,000	60	73	1
5. 1896.....	—	25	135	20	8,000	49	142	6
6. 1897.....	—	11	29	3	1,800	9	5	1
7. 1898.....	—	—	9	—	3,000	11	—	—
8. 1899.....	—	5	1	—	1,700	21	1	—

It is understood that all specimens were derived from the *Oenothera Lamarckiana* in all the generations enumerated.

¹⁾ Biologisches Centralbl., XXI., p. 298.

Now the various forms of mutation enumerated in the table are *by no means variations* or races commonly so-called, but exhibit and possess all the characteristic traits of *systematic species*.

For, (1) the newly originated forms differ from their parent-stock not merely in a few details, as variations generally do, but in *all parts* and in *all stages of development* as well.

(2) The new forms are *not connected* with each other by means of *transitional forms*. They can be recognized already as young plants, but are, of course, more readily distinguished by the points of difference coming into prominence as the plants approach their full-grown state. Furthermore, transitional forms that might give rise to doubts concerning the species to which they belong, are hardly ever to be found. So true is this that the systematic position of dead and dried specimens can promptly be determined to exactness.

(3) The new forms, moreover, possess *perfect constancy* and *transmit the features peculiar to their nature unchanged to their offspring*. Nor is any sign of an *atavistic* return to the *Lamarckiana* type to be noticed. Thus, to mention only one example, the 450 seeds produced by the one specimen of the *Oenothera gigas* in 1895 were sown in 1897, and sent forth 450 specimens of the *O. gigas*, while only one of them betrayed at the same time some characteristics of the *O. nanella* and not a single one those of the *O. Lamarckiana*.

Consequently it seems highly probable that the *O. Lamarckiana* has in fact produced a number of true *systematic species*. It is, moreover, plain that only an *intrinsic principle* can fully account for the sudden

and saltatory changes wrought in the evolutionary process which we have just described.

More intricate and in many ways different is the argument advanced by Wasmann, which we shall now proceed to consider at least in its broadest outlines. It is a well-known fact that in the nests of certain ants a number of insects, called guests, are wont to dwell, and, as the case may be, maintain a more or less friendly (mutual) or indifferent relation to the ants themselves. These insects, in the main, are members of the beetle order and belong *especially to the family of the Staphilinidæ* or rove-beetles. Remembering this simple fact we shall be able more easily to understand the following statement which represents the "major" of Wasmann's argument.

Protracted observations and many experiments showed that the four ant-guests: *Dinarda dentata* Grav., *D. Maerkelii* Ksw., *D. Hagensi* Wasm., and *D. pygmaea* Wasm. were seen to manifest themselves as four different forms of adaptation (Anpassungsformen) of one and the same generic type to the four different species of ants in whose nests they dwelt (to the four ants: *Formica sanguinea* Latr., *F. rufa* L., *F. exsecta* Nyl., and *fusca-rufibarbis* For.). The adaptation refers primarily to size and color. Its purpose is to protect the *Dinarda*, which belongs to the so-called indifferent guests.

Now these various adaptations of one and the same generic type clearly point to the actual differentiation of the type with results of a lasting nature, — in other words to a real specific evolution.

For, as comparative zoogeography attests, the deviation of the four forms from the original type of the

Dinarda and their specific development has not yet reached the stage of completion, but only *different stages of perfection*.

1. The progress in specific development to which the four forms of the Dinarda are subject, is *greatest* in those parts of the European continent, where the final retreat of ice and ocean in the last glacial period was first accomplished, as in the northern valley of the Rhine, in lower Austria, Silesia, Bohemia, etc. "It was near Linz on the Rhein," says Wasmann, "that I observed a great number of the four forms of the Dinarda together with their respective hosts. But all of them clearly revealed the characteristics of well-defined species. No transitional forms could be discovered; the points of difference between the four were unvarying." ¹⁾

2. The progress is *least* in those tracts that were longest buried under ice and water, as it happened to the Central Alps and the regions along the northern and north-western coasts of middle Europe. Here the differentiation has scarcely begun.

3. Between these two extremities a *wide region of transition* intervenes, where the differentiation of the generic type of the Dinarda is still in a state of progressive development. Though this latter statement, as restricted by Wasmann himself, is still somewhat hypothetical in its generalization, still the fact remains that especially the *Dinarda pygmaea* offers a *striking example of specific evolution going on under our very eyes. By way of varieties and races it has attained different stages of perfection at different points of its geographical distribution.*

¹⁾ Biologisches Centralbl., XXI., p. 703,

The factors that were and are still active in this evolution are, next of all, an *intrinsic* principle of development acting in harmony with an *external directive* which, in the case under consideration, can easily be detected in the difference of the ants that harbor the *Dinardae* in their nests.

The objection that the four *Dinardae* are not to be regarded as four different species, does not weaken the force of our argument. For, granted they be only races, *they are by no means equivalent races*, but such as have reached *different stages on the way of specific development and differentiation*.

Consequently, far from being surprised, we find it very reasonable that at the end of his learned treatise and substantial explanation, Wasmann comes to the conclusion: "If one could prove that all these facts (Wasmann mentions many more, the argumentative value of which is of an indirect character) can be accounted for equally well or even better without accepting the theory of evolution, then I admit that this theory in the present case at least is not sufficiently upheld by facts. If not, no one can blame me, for acknowledging that theory as the best explanation of facts otherwise inexplicable." ¹⁾

These are the arguments proposed by Hugo de Vries and E. Wasmann. What are we to think of them? They evidently *deny the absolute constancy of specific characters* and maintain that the idea of a *saltatory* evolution proceeding from an *intrinsic principle* and under the guidance of an *external directive* is no longer a mere hypothesis, but a fact supported by *direct* arguments of considerable weight and probabil-

¹⁾ Biol. Centralbl., XXI., p. 750.

ity. How far this probability goes, is difficult to state. As far as Wasmann's argument, at least, is concerned, an *unusual* and *very minute* knowledge of the structure and habits of tiny insects is required for the full appreciation of the facts.

This much, however, is certain that *no one can object to the arguments of the two scientists on the ground of religion or philosophy, unless he mistake the meaning of evolution, nor on the ground of the natural sciences, unless he be able to disprove the facts or to show that the acceptance of evolution is unnecessary to understand and explain them.*

It may be added that paleontology offers a great many facts which at least indirectly point to the same conclusion suggested by the arguments of de Vries and Wasmann. In case of the Equidae (horse), for instance, there can hardly be any doubt that we have a true specific development. For the progressive changes observed in a good many species of successive geological periods do not only refer to a single organ, but (1) to the tarsi of the fore-foot, (2) to those of the hind-foot, (3) to the radius and ulna, (4) to the tibia and fibula, (5) to the length and convolutions of the teeth. Other facts of a similar nature refer to the Brachiopod-genus *Lingula*, the well-known *Nautilus*-species, to the *Ammonites*, and to many insects such as the *Phasmidae*, the *Paussidae* and others.

2. *It is still impossible to define how far within the realm of plant and animal life the principles of evolution are to be applied.* It is certain that the evidence in favor of specific development becomes weaker and weaker, the greater the number of different species which are compared with each other. In case of the

so-called sub-kingdoms and main classes, *probabilities become mere possibilities*, so that we cannot make any reliable statement concerning their origin. "The absence of life," says Conn, "in rocks older than the Silurian, shrouds in absolute darkness the origin of the various sub-kingdoms and classes, for, at the very first glimpse we have of life they were as widely apart as they are now." ¹⁾ Again: "Before the Silurian age is over, all of the important classes have made their appearance without previous warning." ²⁾

Similarly Geikie: "Ferns, equisetums, and lycopods appear as far back as the Old Red Sandstone, not in simple or more generalised, but in more complex structures than their living representatives. The earliest known conifers were well-developed trees with woody structure and fruits as highly differentiated as those of the living type. . . ." ³⁾

Moreover, fossils like the famous "bird-reptile" *Archeopteryx* and the well-known toothed birds of the Cretaceous Era can hardly figure as evident connecting links.

We do not know how many primitive species were originally called into existence by God; nor can we tell whether these primitive species were produced simultaneously or only after shorter or longer intervals. We are also more or less ignorant of the individual, internal and external causes at work in the different specific evolutions. Not until years of unceasing scientific investigation have elapsed can we reasonably hope to unravel such and similar secrets, and it

¹⁾ 1. c., p. 117.

²⁾ 1. c. p. 96.

³⁾ 1. c., p. 666.

is doubtful whether the natural sciences will unravel them at all.

What, therefore, is the attitude of the natural sciences towards evolution?

First of all they confirm the verdict passed by faith and reason, according to which the theory of evolution is kept within due limits. Furthermore, they furnish us at least a few facts which, with great probability, must be interpreted in favor of specific development. It is meanwhile impossible to determine the number of species which have been developed from a primitive type originally produced by God. At any rate, to adopt the principles of evolution as probable, is safe and sensible. However, one could hardly be censured as unreasonable, were he to suspend his judgment. For, as the theory stands today, it is still in a very primitive state, being supported only by probable arguments, which can be fully appreciated only by specialists. A hostile attitude, however, is unpardonable and cannot be defended, except weighty reasons be advanced, such as would satisfactorily account for the facts of Wasmann and de Vries without implying evolution.

CONCLUSION.

Thus we have reached the end — and we venture to hope — the purpose of our inquiry. Let us briefly review its result.

The word "Darwinism" is used in four different meanings. In the first place, it denotes Darwin's theory of natural selection; secondly, Haeckel's monism; thirdly, man's animal descent; fourthly, the theory of evolution as opposed to the theory of constancy.

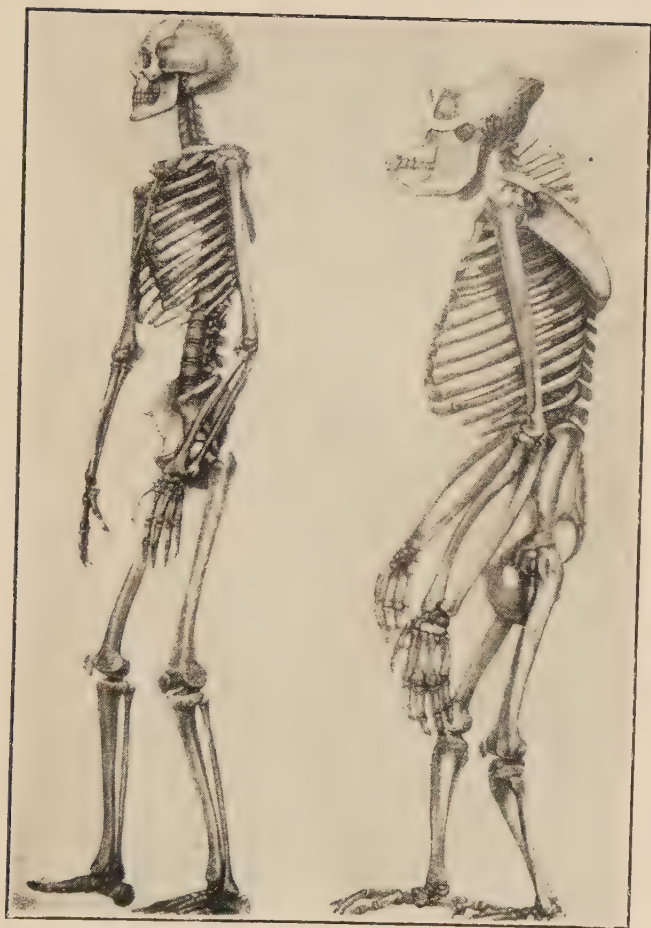
The last signification of Darwinism is an abuse of the term, which merely serves to create bias and confusion.

Darwinism, properly so called, is to be unconditionally rejected. For (1) Darwin's theory is insufficient in principle and contradicted by facts.

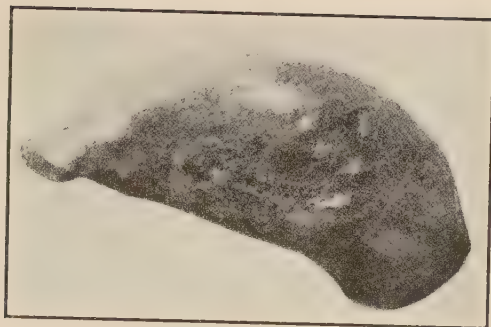
(2) Haeckel's monism is not only a philosophical absurdity, but on account of its atheistic character undermines the very groundwork of religion and morality.

(3) Similarly the doctrine of man's animal descent is directly opposed to faith, and from a philosophical point of view untenable. For man possesses a spiritual soul. Nor does man's body descend from the animal, it being directly produced by God. Every attempt to argue to the contrary from a scientific basis has proved to be a failure.

The theory of evolution, on the other hand, is a harmless doctrine which belongs entirely to the domain of the natural sciences. For this theory does not consider the origin of life, nor the origin of man. It supposes, moreover, intrinsic causes of development and rests on the principle that God does not act by direct and personal intervention, if secondary or created causes can achieve the same results. Hence the theory of evolution is not opposed to faith, nor does it contradict the principles of reason. On the contrary, being in full harmony with the Christian view of creation, it is supported by facts, the probable argumentative force of which can hardly be denied.



Skeleton of man and gorilla, the latter unnaturally stretched.
(Ranke.)



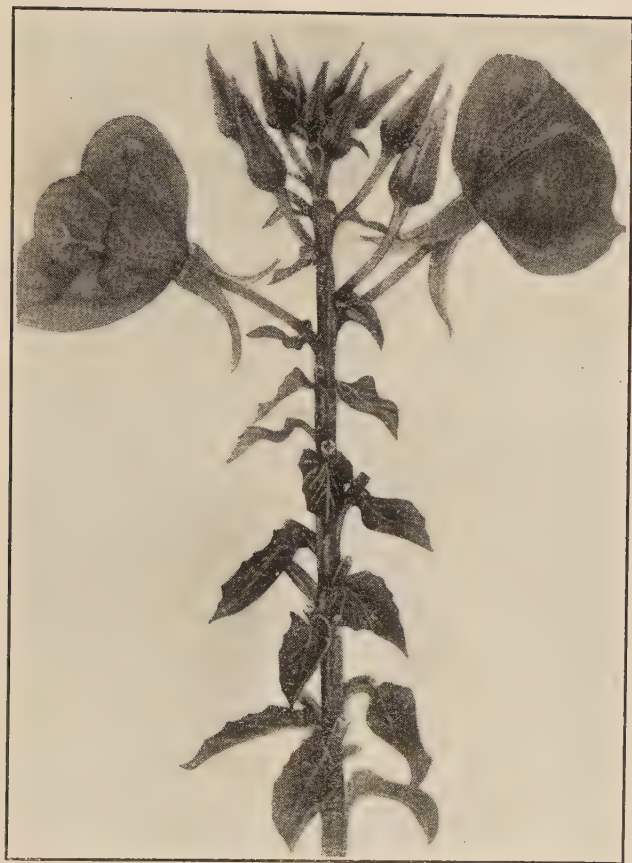
Skullcap of *Pithecanthropus erectus*.
(Dubois.)



The Neanderthal Skullcap.
(Macnamara.)



Oenothera Lamarckiana.
(DeVries.)



Oenothera gigas, originated in 1895.
(DeVries.)

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Muckermann H., S.J.
AUTHOR

Attitude of Catholics toward
Darwinism and Evolution
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